Vol. 900 Number 4

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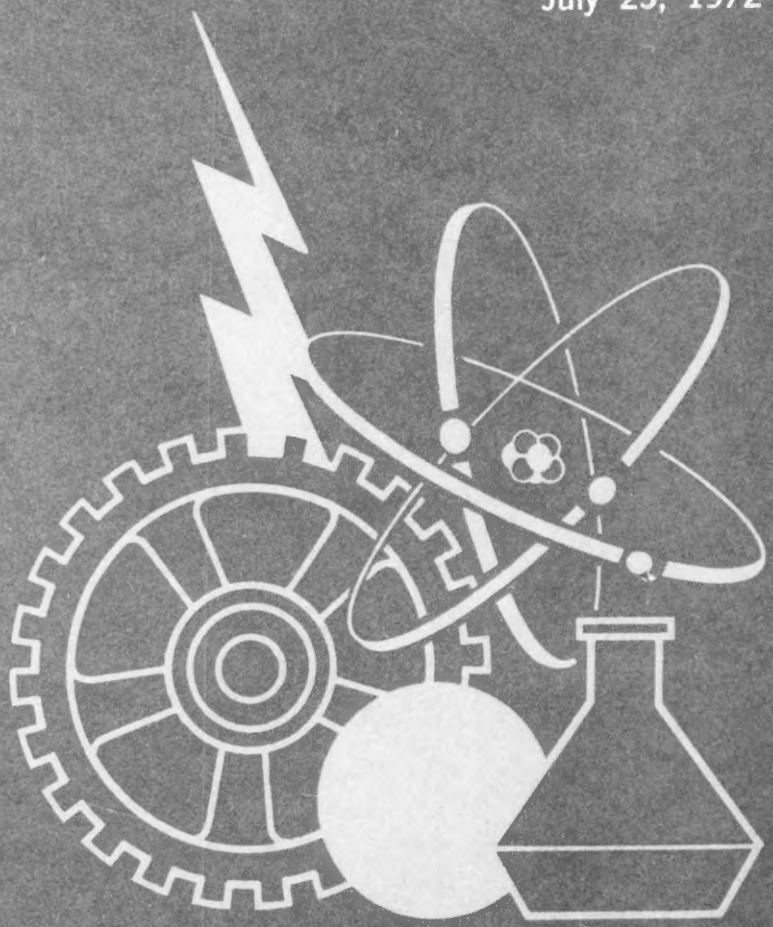
PATENTS

July 25, 1972



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July 25, 1972 Volume 900 Number 4

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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of former examiners who are applying for registration to practice before the Patent Office on the basis of 4 years or more service in the Examining Corps.

Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before August 11, 1972.

Brodmerkel, Alexander S., 431 N.W. 26th Court, Pomano Beach, Fla. 33064

Fichter, Richard E., 13117 Poplar Tree Road, Fairfax, Va. 22030

Jarvis, William L., 5921 Old Sawmill Road, Fairfax, Va. 22030

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Litman, Mark A., 1400 S. Joyce St., #A–1106, Arlington, Va. 22202

Schwartz, Raphael H., 3750 Galt Ocean Drive, #909, Fort Lauderdale, Fla. 33308

LUTRELLE F. PARKER,
June 29, 1972. *Chairman, Committee on Enrollment.*

Bulky Specimens in Trademark and Service Mark Applications

Many of the applications which are being received in the Trademark Application Section contain specimens which are too bulky to be placed inside the application file. The handling and storing of these bulky specimens is taking more time and space than can be justified. The trademark rules do not provide for filing bulky specimens, and applicants and attorneys are requested to adhere to the precise provisions of the rules.

Trademark Rule 2.56 requires that specimens be of a material suitable for being placed in a file, be capable of being arranged flat (preferably not more than one inch in thickness), and not be larger than 8½ x 13 inches. If specimens of this character cannot be furnished, Trademark Rule 2.57 provides that facsimiles in the nature of photographs or similar reproductions be filed. Facsimiles must not be larger than 8½ x 13 inches and should clearly and legibly show the mark and all matter used in connection therewith.

In order to reduce the quantity of bulky specimens and to avoid the possibility of delay in examination due to bulky specimens, the following procedure has been adopted:

When specimens cannot be fitted into the file, the Trademark Application Section forwards the specimens to the Examiner separate from the file and attaches to the file two copies of a form which is a pre-examination memorandum pointing out that the bulky specimens are not acceptable and that proper specimens should be filed promptly. Upon receipt of the file and the forms, the Examiner mails one copy of the form to the applicant, or applicant's attorney if there be one, and places the other copy in the file. The Examiner will then destroy four of the bulky specimens, retaining one until proper specimens or facsimiles are received. Failure to furnish proper specimens as requested in the memorandum may delay the process of examination of the application.

ROBERT GOTTSCHALK,
June 16, 1972. *Commissioner of Patents.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,594,256, C. E. Compton, MINING MACHINE HEAD; **2,874,955,** same, ROTARY MINING MACHINE CUTTER HEAD WITH REAR HELICALLY EXTENDING TRANSVERSE OPENING; **2,719,708,** same, PAN GUIDEWAY FOR ROTARY MINING HEAD, **filed** Dec. 21, 1964, U.S. Ct. of App., 4th Cir., W. Va. (Fairmont), Doc. 803–F, *Charles E. Compton et al.* v. *Metal Products, Inc.* Opinion, because of misuse of Compton patents in the Joy-Compton and Joy-Polan agreements, we reverse the district court's decision to enforce the plaintiffs' rights under the Patents Nos. 2,594,256, 2,784,955 and 2,719,708. Plaintiffs are entitled to no accounting for past damages. The district court will withhold its injunction until misuse has abated. REVERSED, decided Dec. 17, 1971.

2,719,708. (See 2,594,256.)

2,729,146, K. Wandel, IMPELLERS FOR PULP DISINTEGRATING MACHINES; **3,319,897,** Craig, Combs, Hilbert, Kemper and Tahar, WASTE DISPOSAL UNIT, **filed** June 21, 1968, D.C. Md. (Baltimore), Doc. 19618–C, *Somat Corporation* v. *The University of Maryland and Wascon Systems, Inc.* Complaint dismissed upon defendants' motion. Stipulation of counsel filed dismissing the complaint between plaintiff and defendants, Feb. 29, 1972.

2,784,955. (See 2,594,256.)

2,803,105, Stoddard and Seem, APPARATUS FOR PROCESSING TEXTILE YARNS; **2,803,108,** same, METHODS OF PROCESSING TEXTILE YARNS; **2,803,109,** same, METHOD OF PROCESSING THERMOPLASTIC YARNS; **3,091,912,** same, METHOD OF PROCESSING STRETCH YARN AND YARNS PRODUCED THEREBY; **3,077,724,** same, APPARATUS FOR PROCESSING YARNS; **3,472,011,** Scragg and Sutton, TREATMENT OF ARTIFICIAL YARNS AND THREADS, **filed** June 28, 1971, D.C., S.D. Fla. (Miami), Doc. 71–1026–C–JLK, *Celanese Corp. et al.* v. *Leesona Corp. et al.*

2,803,108. (See 2,803,105.)

2,803,109. (See 2,803,105.)

2,903,445. (See D. 171,963.)

2,925,665, T. R. Smith, CLOTHES DRIER WITHOUT CASING; **2,958,138,** A. T. Ashby, CLOTHES DRIER WITH STATIONARY COWLING; **2,958,139,** T. R. Smith, CLOTHES DRIER; **D. 211,602,** same, LAUNDRY MACHINE, **filed** Nov. 23, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2946, *The Maytag Company* v. *The Hoover Company.* By stipulation, cause dismissed, each party to bear its own costs, Oct. 12, 1971.

2,958,138. (See 2,925,665.)

2,958,139. (See 2,925,665.)

2,980,982. (See 3,214,899.)

3,019,497, Horton, Ashbrook and Feagin, MAKING FINE GRAINED CASTINGS; **3,157,926,** same; **3,259,948,** R. C. Feagin, same, **filed** Mar. 1, 1972, D.C. Oreg. (Portland), Doc. C–72–168, *Howmet Corporation* v. *Precision Castparts Corp.* Same, **filed** Apr. 13, 1971, D.C., S.D. Fla. (Miami), Doc. 71–566–C–CA, *Howmet Corporation* v. *Aircraft Casting, Inc.* By stipulation, complaint and all counterclaims are dismissed, Dec. 21, 1971.

3,035,488, R. B. Hale, TEST APPARATUS FOR INTERNAL COMBUSTION ENGINES; **Re. 26,163,** B. F. W. Heyer, ENGINE PARAMETER ANALYZER, **filed** Jan. 14, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c124, *Applied Power Industries, Inc.* v. *Sun Electric Corporation.*

3,077,724. (See 2,803,105.)

3,091,912. (See 2,803,105.)

3,126,692, Weygandt and Weygandt, MACHINE FOR HARVESTING BERRIES AND SIMILAR PRODUCE FROM THEIR PLANTS; **3,439,478,** J. R. Orton, METHOD OF HARVESTING GRAPES OR THE LIKE; **3,439,982,** same, GRAPE HARVESTING MACHINE, **filed** Aug. 16, 1971, D.C., E.D. Wash. (Yakima), Doc. 2753, *Chisholm-Ryder Company, Inc.; Raymond M. Weygandt and Raymond A. Weygandt* v. *Leslie V. Smith and Orchard Master, Inc.*

3,157,926. (See 3,019,497.)

3,213,303. (See D. 219,950.)

3,214,899, Wininger and Dyer, CORDAGE PRODUCT; **2,980,982,** Casta, Le Boeuf and Lefevre, FIBROUS ARTICLE, **filed** June 21, 1971, D.C., N.D. Ala. (Birmingham), Doc. 71–545–E, *Eastman Kodak Co.* v. *Indian Head, Inc.* Order on motion of parties and by consent of parties dismissing action without prejudice, Dec 8, 1971.

3,251,234. (See Re. 25,834.)

3,259,948. (See 3,019,497.)

3,265,092, Ely, Burley and Clement, FEP-FLUOROCARBON TUBING; **Re. 27,028,** same, **filed** June 18, 1971, D.C. Del. (Wilmington), Doc. 4161, *Fluorodynamics, Inc.* v. *Penntube Plastics Company.* Stipulated case dismissed without prejudice, Feb. 2, 1972.

3,308,491, W. R. Spence, CUSHION STRUCTURE; **3,548,420,** same, **filed** Dec. 23, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c3085, *Stryker Corp.* v. *Minnesota Mining and Mfg. Co.*

3,319,897. (See 2,729,146.)

3,359,116. (See 3,378,375.)

3,378,375, L. L. Little, METHOD OF PREPARING ACIDIFIED DAIRY PRODUCTS; **3,359,116,** same, PROCESS OF MAKING SOUR CREAM TYPE PRODUCTS AND CREAM CHEESE, **filed** Dec. 1, 1971, D.C. Del. (Wilmington), Doc. 4285C, *Diamond Shamrock Corporation* v. *The Battelle Development Corporation.*

3,393,372, Vickery and Fisher, CARBON DIOXIDE LASER SYSTEMS FOR THE EMISSION OF COHERENT RADIATION, **filed** Mar. 1, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c527, *Semi-Elements, Inc., Joseph V. Fisher, Laverne B. Fisher* v. *Motorola Semiconductor Products, Inc.*

3,406,618, B. Bowman, METHOD OF MANUFACTURING BRICKS, TILES, COBBLESTONES AND THE LIKE DIRECTLY ON THE GROUND TO BE COVERED, **filed** Jan. 21, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–149–MML, *Bomanite Corporation* v. *Edward F. Shea, Jr.*

3,439,478. (See 3,126,692.)

3,439,482. (See 3,126,692.)

3,449,129, Reimus and Saporito, CONCENTRATION PROCESS, **filed** June 11, 1969, D.C. Del. (Wilmington), Doc. 3725, *Struthers Scientific & International Corporation* v. *General Foods Corporation.* Dismissal on consent of the parties, Feb. 23, 1972.

3,450,212, A. G. Sylvester, MULTIPLE TOOTH SUBSOIL PLOW, **filed** Jan. 17, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72–39–C, *Cline Industries, Inc.* v. *James Harrison, doing business as Harrison Manufacturing Co.* On motion of plaintiff, case dismissed with prejudice, Jan. 31, 1972. **Same, filed** Feb. 8, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72–86–C, *Cline Industries, Inc.* v. *James Harrison, doing business as Harrison Manufacturing Co.*

3,472,011. (See 2,803,105.)

3,472,939, Petrocci, Prodo, Shay and Wakeman, SYNERGISTIC BLENDS OF MICROBIOCIDAL QUATERNARY AMMONIUM COMPOUNDS; **3,525,793,** MICROBIOCIDAL QUATERNARY AMMONIUM COMPOUNDS CONTAINING SYNERGISTIC BLENDS OF ALKYL GROUPS, **filed** Dec. 2, 1971, D.C.N.J. (Newark), Doc. C–1800–71. *Millmaster Onyx Corporation* v. *Lonza Inc.*

3,480,410, J. Hummer, WC-CrC-Co SINTERED COMPOSITE, **filed** Jan. 10, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c72, *Fansteel, Inc.* v. *Carmet Co., GTE Sylvania and Federal-Mogul.*

3,487,221, L. M. Frank, LIGHT ACTIVATED TRIGGER FOR PHOTOGRAPHIC FLASH SYSTEM, **filed** Mar. 3, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c572, *The Lase Co.* v. *Honeywell, Inc.*

3,511,208, O. C. Woodruff, FISHING RIG, **filed** Feb. 17, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72–104–C, *Jamajo Industries, Inc.* v. *Speegle-Horaney, Inc.*

3,514,834, E. G. Back, Jr., METHOD FOR SECURING AN ELONGATED METAL MEMBER TO A FLAT METAL SHEET, **filed** Feb. 15, 1972, D.C. Conn. (New Haven), Doc. 14894, *Airtex Corporation* v. *Fine Line Brazing, Inc.*

3,524,272, C. A. Elwell, SOUND REPRODUCER AND STEREOSCOPE COMBINATION, **filed** Feb. 18, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–366–RJK, *Reuben Klamer et al.* v. *GAF Corporation et al.*

3,525,793. (See 3,472,939.)

3,536,190, Hirsch and Koster, PROTECTIVE PACKAGE AND METHOD OF MAKING SAME, **filed** Feb. 15, 1972, D.C., S.D.N.Y., Doc. 72–C–686, *Stanley Hirsch* v. *Wilcox & Gibbs.*

3,548,420. (See 3,308,491.)

3,614,937, D. A. Schulman, PONTOON STRUCTURE, **filed** Feb. 25, 1972, D.C. Minn. (Minneapolis), Doc. 4–72–C–133, *David A. Schulman, doing business as Dase Company* v. *Huck Finn, Inc. et al.*

3,623,223. (See D. 219,950.)

Re. 25,834, Glezer and Reed, ADJUSTABLE INDUCTANCE UNIT; **3,251,234,** A. A. Valdettaro, VHF-UHF TELEVISION TUNER, **filed** Mar. 2, 1970, D.C.N.J. (Newark), Doc. 70–C–1857, *Alps Electric Co., Ltd. and Sanuo Electric Co., Inc.* v. *Sarkes Tarzian, Inc.* Stipulation, order dismissed with prejudice, Mar. 26, 1971.

Re. 26,162. (See 3,035,438.)

Re. 27,028. (See 3,265,092.)

D. 171,963, L. Blum, RAIL; **2,905,445,** same, ORNAMENTAL RAIL STRUCTURES, **filed** Aug. 7, 1968, D.C. Kans. (Wichita), Doc. W–4037, *Blumcraft of Pittsburgh et al.* v. *Architectural Art Mfg., Inc. and Wenzel W. Thom.* Opinion and order sustaining defendants' motion for summary judgment, Jan. 7, 1972.

D. 203,780, D. W. Beck, FOLDING BOAT PROPELLER, **filed** Feb. 23, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–394–FW, *Martec Engineering Corp. and David W. Beck* v. *Michigan Wheel Co., Inc., Ren Ludlan, James Franco and Dennis Arey, doing business as AAA Propeller Co.*

D. 211,602. (See 2,925,665.)

D. 219,950, J. E. Edgell, CORDLESS ELECTRIC GRASS SHEAR; **3,623,223,** Edgell and Maniero, CORDLESS ELECTRIC GRASS SHEAR; **3,213,303,** Riley and Neuhardt, CORDLESS DIRECT CURRENT MOTOR DEVICE UTILIZING PERMANENTLY-MAGNETIC TUBULAR SEGMENTS, **filed** Nov. 30, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2859, *H. K. Porter Company, Inc.* v. *The Black & Decker Manufacturing Company.*

D. 221,219, T. Winrow, SOFA, **filed** Nov. 12, 1971, D.C., M.D. Fla. (Jacksonville), Doc. 71–914–C, *Futorian Corporation* v. *Madison House, Inc.* Consent decree filed for plaintiff, Feb. 3, 1972.

Certificates of Correction for the Week of July 25, 1972

D. 223,115	3,619,293	3,640,481	3,651,066
D. 223,116	3,621,099	3,640,522	3,651,078
Re. 27,225	3,622,085	3,640,576	3,651,087
3,518,435	3,622,467	3,640,758	3,651,107
3,540,213	3,622,584	3,640,942	3,651,169
3,541,273	3,623,578	3,641,015	3,651,170
3,544,769	3,624,013	3,641,442	3,651,293
3,547,800	3,624,086	3,641,471	3,651,313
3,550,264	3,624,307	3,642,236	3,651,420
3,558,688	3,624,623	3,642,440	3,651,449
3,563,167	3,625,287	3,642,591	3,651,696
3,563,699	3,625,453	3,642,705	3,652,018
3,566,786	3,625,609	3,642,873	3,652,560
3,567,937	3,625,749	3,642,947	3,652,619
3,569,688	3,626,045	3,643,678	3,652,680
3,577,579	3,626,238	3,643,759	3,652,945
3,582,911	3,627,214	3,643,845	3,653,146
3,586,436	3,627,687	3,643,863	3,653,506
3,586,556	3,627,764	3,644,074	3,653,512
3,587,189	3,628,140	3,644,224	3,653,547
3,587,242	3,628,586	3,644,256	3,653,656
3,587,954	3,628,878	3,644,312	3,654,088
3,588,409	3,629,173	3,644,350	3,654,169
3,590,288	3,629,298	3,644,522	3,654,181
3,592,326	3,629,328	3,644,710	3,654,229
3,592,738	3,629,721	3,644,723	3,654,386
3,593,945	3,629,833	3,645,047	3,654,546
3,594,909	3,630,318	3,645,375	3,655,099
3,594,938	3,630,842	3,645,680	3,655,333
3,596,758	3,630,846	3,645,824	3,655,431
3,596,784	3,630,944	3,645,920	3,655,538
3,597,599	3,631,008	3,646,055	3,655,736
3,597,834	3,631,075	3,646,229	3,655,781
3,598,128	3,631,691	3,646,289	3,657,327
3,598,397	3,631,722	3,646,486	3,658,035
3,599,169	3,632,359	3,646,563	3,658,530
3,599,320	3,633,160	3,646,572	3,658,536
3,599,376	3,633,321	3,646,577	3,658,566
3,599,494	3,633,328	3,646,854	3,658,639
3,599,537	3,633,558	3,646,964	3,658,702
3,600,317	3,634,270	3,647,205	3,658,880
3,600,418	3,634,289	3,647,288	3,658,906
3,600,430	3,634,397	3,647,315	3,658,939
3,600,825	3,634,455	3,647,629	3,659,135
3,601,070	3,634,500	3,647,712	3,660,164
3,601,829	3,634,839	3,647,749	3,660,229
3,601,841	3,634,843	3,647,804	3,660,476
3,602,404	3,635,822	3,648,048	3,660,937
3,602,516	3,635,976	3,648,149	3,660,967
3,607,666	3,636,143	3,648,179	3,661,289
3,608,631	3,637,659	3,648,216	3,661,852
3,609,134	3,637,758	3,649,038	3,661,465
3,609,477	3,637,825	3,649,500	3,662,013
3,610,363	3,637,832	3,649,584	3,662,092
3,614,703	3,638,503	3,649,821	3,662,196
3,615,433	3,638,661	3,650,020	3,662,552
3,615,581	3,639,010	3,650,119	3,662,620
3,616,359	3,639,260	3,650,603	3,663,352
3,616,935	3,639,481	3,650,681	3,663,620
3,617,437	3,639,487	3,650,709	
3,618,074	3,639,587	3,650,994	
3,618,530	3,640,430	3,651,046	

Dedications

2,913,274.—*Winfred M. Brooks*, West Orange, and *Sigurd M. Moberg*, Pompton Plains, N.J. LOOP SEAL. Patent dated Nov. 17, 1959. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company*.

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,130,509.—*Winfred M. Brooks*, West Orange, N.J. TAG. Patent dated Apr. 28, 1964. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company*.

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,291,493.—*Richard W. Blair*, Arlington Heights, Ill. END-FACE SEAL. Patent dated Dec. 13, 1966. Dedication filed Mar. 16, 1972, by the assignee, *Chicago Rawhide Manufacturing Company*.

Hereby dedicates to the Public the entire term of said patent.

3,291,494.—*Seymour A. Hatch*, Forest Park, *James P. Morley*, Morton Grove, and *Richard W. Blair*, Arlington Heights, Ill. END FACE SEAL ASSEMBLY. Patent dated Dec. 13, 1966. Dedication filed Mar. 16, 1972, by the assignee, *Chicago Rawhide Manufacturing Company*.

Hereby dedicates to the Public the entire term of said patent.

3,445,155.—*Francis C. Sturrock*, Skokie, Ill. MECHANISM FOR RELATIVE ADJUSTMENT OF AXIALLY SPACED LENS ELEMENT. Patent Dated May 20, 1969. Dedication filed Apr. 14, 1972, by the assignee, *Bell & Howell Company*.

Hereby dedicates to the Public the remainder of the term of said patent.

Disclaimers

3,108,159.—*Charles F. Mattke*, Fanwood, N.J. SPACE SAVER DIAL. Patent dated Oct. 22, 1963. Disclaimer filed Feb. 11, 1972, by the assignee, *Bell Telephone Laboratoris, Incorporated*.

Hereby enters this disclaimer to claims 1 through 7 of said patent.

3,164,129.—*Preston D. Rigterink*, Holland, Mich. AUTOMATIC NEST GUARD. Patent dated Jan. 5, 1965. Disclaimer filed Feb. 17, 1972, by the assignee, *U.S. Industries, Inc.*

Hereby enters this disclaimer to claims 11, 12 and 13 of said patent.

3,270,053.—*Earl Reeder*, Nutley, and *Leo Henryk Sternbach*, Upper Montclair, N.J. 2-(α-HALO-LOWER ALKANOYL-AMINO)-BENZOPHENONES. Patent dated Aug. 30, 1966. Disclaimer filed Feb. 15, 1972, by the assignee, *Hoffmann-La Roche Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

3,360,913.—*Charles G. Burton*, Lewiston, N.Y. GRAPE HARVESTER. Patent dated Jan. 2, 1968. Disclaimer filed Feb. 17, 1972, by the inventor, the assignee, *Chisholm-Ryder Company, Inc.*, assenting.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,405,559.—*Elbert Marston Moffatt*, Glastonbruy, Conn. PRESSURE TRANSDUCER. Patent dated Oct. 15, 1968. Disclaimer filed Jan. 17, 1972, by the assignee, *United Aircraft Corporation*.

Hereby enters this disclaimer to claim 6 of said patent.

3,434,681.—*Victor G. Bockelmann*, El Centro, Calif. PARACHUTE CANOPY DEFLATION APPARATUS. Patent dated Mar. 25, 1969. Disclaimer filed Jan. 26, 1972, by the assignee, *United States of America as represented by the Secretary of the Navy*.

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

3,498,535.—*Hugo A. Panissidi*, Peekskill, N.Y. ENCODER CARRY MECHANISM. Patent dated Mar. 3, 1970. Disclaimer filed Apr. 10, 1972, by the assignee, *International Business Machines Corporation*.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,532,827.—*James C. Ewin,* Holmdel, N.J. SCANNER ARRANGEMENT FOR IDENTIFYING CIRCUITS CHANGING THEIR STATES, STORING THE TIMES OF SUCH CHANGE, AND DETERMINING THE CHARACTER OF THE CHANGE IN A COMMUNICATION SWITCHING SYSTEM. Patent dated Oct. 6, 1970. Disclaimer filed Feb. 23, 1972, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to claims 9 and 10 of said patent.

3,578,238.—*Joseph F. Schillinger,* Chicago, and *Thomas B. Moser,* Glen Ellyn, Ill. CONTAINER WHICH COMPLETELY ENCLOSES ARTICLES. Patent dated May 11, 1971. Disclaimer filed Apr. 3, 1972, by the assignee, *Weyerhaeuser Company.*

Hereby enters this disclaimer to claims 7 and 8 of said patent.

3,581,702.—*Theodore J. Moberg,* Hartford, Wis. TRIM AND TILT MECHANISM FOR OUTBOARD PROPULSION UNIT. Patent dated June 1, 1971. Disclaimer filed Feb. 10, 1972, by the assignee, *Chrysler Corporation.*

Hereby enters this disclaimer to claims 1 through 16, inclusive, of said patent.

3,585,361.—*Samuel R. Rosen,* Lorain, *Alan B. Reighard,* Bay Village, and *Julius S. Drozek,* Lorain, Ohio. SUPPLY SYSTEM FOR HEATING AND DISPENSING MOLTEN THERMOPLASTIC MATERIAL. Patent dated June 15, 1971. Disclaimer filed Jan. 6, 1972, by the assignee, *Nordson Corporation.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,612,548.—*Herbert E. Tracy,* Alhambra, Calif. MECHANICAL SEAL SPRING HOLDER. Patent dated Oct. 12, 1971. Disclaimer filed Mar. 27, 1972, by the assignee, *Borg-Warner Corporation.*

Hereby enters this disclaimer to claims 1 to 4 inclusive, of said patent.

3,615,541.—*Hubert Nerwin,* Rochester, N.Y. SLIDE TRANSPARENCY UNIT FOR IN CAMERA PROCESSING. Patent dated Oct. 26, 1971. Disclaimer filed Feb. 14, 1972, by the assignee, *Eastman Kodak Company.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,616,553.—*Francis H. Holland,* Billings, Mont. ELEVATING BELT LOADER AND EXCAVATION APPARATUS. Patent dated Nov. 2, 1971. Disclaimer filed Mar. 21, 1972, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to Sept. 29, 1987.

Patents Available for Licensing or Sale

D. 216,903. FOLDABLE EXERCISING BICYCLE. Carl W. Rubel, 2402 State Highway 20, Marysville, Calif., 95901.

2,995,619. SYSTEM OF TELEVISION TRANSMISSION AND PHOTOGRAPHIC REPRODUCTION OF THE TELEVISED IMAGE. Samuel Freeman, 13 Birchwood Court E., Syosset, N.Y., 117,791.

3,151,864. SEESAW WITH SPRINKLER. Stanley Sundusky, 10721 Wadsworth Ave., Garfield Heights, Ohio, 44125.

3,225,761. FATIGUE SUPPORT. Robert Swenson, 120 Poinciana Drive, Martinez, Ga., 30907.

3,603,594. GOLF GAME. William D. Kelley. Correspondence to: Robert M. Phipps, 21679 Canterbury St., Grosse Ile, Mich., 48138.

3,631,388. ENGINE OIL AND WATER TEMPERATURE AUDIO WARNING SYSTEM. Raymond K. Strong, Strong's Engine Audio Warning Systems, P.O. Box 3536, Fremont, Calif., 94538.

3,635,433. ARTICLE-HOLDING APPARATUS. Malcolm J. Anderson, 42—43 149th St., Flushing, N.Y., 11355.

3,642,095. MUFFLER. Kabushiki K. F. Kogyo, Tokyo, Japan. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,652,508. VISCOSITY STABLE ALIPHATIC POLYURETHANE COMPOSITIONS AND METHOD OF PREPARATION THEREOF. Donald L. Segur et al. Correspondence to: Henry B. Townsend, General Latex and Chemical Corporation, Research Center, High St., North Billerica, Mass., 01862.

3,663,971. BATHTUB. Andre Bonhote, Switzerland. Correspondence to: Stevens, Davis, Miller & Mosher, 1911 Jefferson Davis Highway, Suite 600, Crystal Mall 1, Arlington, Va., 22202.

3,666,936. SHADOW BOX. Ernst H. Janke, 8467 Everglade Drive, Sacramento, Calif., 95826.

3,667,757. BOARD GAME APPARATUS. Eugene P. Holmberg, 18155 Schoenborn St., Northbridge, Calif., 91324.

The following 2 patents are offered by: Langa & Kohne, % Sanford Patent Trust, 109 Wailuku Townhouse Bldg., Wailuku, Maui, Hawaii, 96793.

3,468,344. SINGLE CONTROL DUAL FLOW VALVE.

3,491,790. DIVERTER VALVE.

The following 2 patents are offered by: Harold M. Shaw, Sr., 205 Moiart Ave., Winston-Salem, N.C., 27104.

3,285,135. ELECTRIC DRILL ATTACHMENT FOR ROUTING.

3,620,331. MOVABLE SUSPENSION DEVICE.

General Motors Corporation is prepared to grant non-exclusive licenses under the following patent upon reasonable terms.

Applications for license may be addressed to: The Director, Patent Section, General Motors Building, 3044 West Grand Blvd., Detroit, Mich., 48202.

3,496,023. HIGH DENSITY CELL.

General Electric Company is prepared to grant non-exclusive licenses under the following 11 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: Division Patent Counsel, Switchgear Equipment Business Div., General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,632,929. OPERATING MECHANISM FOR A MULTIPLE INTERRUPTER UNIT CIRCUIT BREAKER.

Applications for license under the following 2 patents should be addressed to: Patent Counsel, Contractor Equipment Division, General Electric Company, 41 Woodford Ave., Plainville, Conn., 06062.

3,463,967. PANELBOARD LOAD CENTER.

3,524,104. PARALLEL ASSISTED CIRCUIT INTERRUPTION DEVICE WITH INTERLOCK.

Applications for license under the following 8 patents may be addressed to: Patent Counsel, LSTG-I & MT Divisions, General Electric Company, 1 River Road, Bldg. No. 28, Schenectady, N.Y.

3,426,587. RUPTURE TEST SPECIMEN AND COUPLING THEREFOR.

3,496,139. EPOXY RESINS WITH REACTION PRODUCT OF A POLYSILOXANE AND AN AMINE.

3,622,524. COMPOSITIONS OF EPOXY RESINS CURED WITH ORGANOTIN COMPOUNDS.

3,623,324. ELECTROHYDRAULIC SPEED CONTROL SYSTEM FOR CROSS COMPOUND TURBINE POWER PLANTS.

3,630,273. AIR COOLED CONDENSER.

3,630,635. TURBINE CASING WITH RAISED HORIZONTAL JOINT.

3,652,881. GENERATOR VENTILATION DOME AND COOLING CASING CONSTRUCTION.

3,652,888. 2-POLE, 45-SLOT, 3-CIRCUIT DYNAMOELECTRIC MACHINE WINDING PATTERN.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 35 patents.

Inquiries respecting licenses should be addressed to: RCA Corporation, Staff Vice President Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

3,659,334. HIGH POWER HIGH FREQUENCY DEVICE.

3,660,667. IMAGE SENSOR ARRAY IN WHICH EACH ELEMENT EMPLOYS TWO PHOTOTRANSISTORS ONE OF WHICH STORES CHARGE.

3,660,818. ELECTRO-OPTICAL MEMORY.

3,661,311. RECORD MEDIUM GUIDE.

3,661,444. COMPOUNDED LIQUID CRYSTAL CELLS.

3,661,570. MAGNETIC HEAD MATERIAL METHOD.

3,661,580. PHOTOGRAPHIC METHOD FOR PRODUCING A CATHODE-RAY TUBE SCREEN STRUCTURE.

3,661,581. METHOD FOR PHOTODEPOSITING SMALLER SIZE IMAGE SCREEN AREAS FOR CATHODE RAY TUBE FROM LARGER SIZE MASK APERTURES.

3,661,641. METHOD OF REMOVING POLYURETHANE RESIN PROTECTIVE COATING.

3,662,051. AUTOMATIC RECORD MOLDING APPARATUS AND METHOD.

3,662,270. VHF/UHF INTERLOCK CIRCUIT.

3,662,289. FREQUENCY MODULATION BY LIGHT IMPINGEMENT ON A SOLID STATE OSCILLATOR.

3,662,454. METHOD OF BONDING METALS TOGETHER.

3,663,276. METHOD OF ADJUSTING THE RESISTIVITY OF THICK-FILM SCREEN-PRINTED RESISTORS.

3,663,744. SELECTIVE TINT CORRECTION CIRCUITS.

3,663,745. COMPENSATED TELEVISION MATRIX AMPLIFIERS.

3,663,862. METHOD OF REBUILDING AN EVACUATED ELECTRON TUBE.

3,663,887. MEMORY SENSE AMPLIFIER INHERENTLY TOLERANT OF LARGE INPUT DISTURBANCES.

3,663,907. BEAM CONVERGENCE EXCITER FOR SHADOW MASK COLOR PICTURE TUBE.

3,663,997. METHOD FOR MAKING A KINESCOPE COMPRISING PRODUCTION AND TREATMENT OF A TEMPORARY MASK.

3,664,298. MANIFOLD FOR FOUNTAIN-TYPE LIQUID DISPENSER.

3,664,894. METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES HAVING HIGH PLANAR JUNCTION BREAKDOWN VOLTAGE.

3,665,254. SEMICONDUCTOR DIODE.

3,665,256. HEAT DISSIPATION FOR POWER INTEGRATED CIRCUITS.

3,665,317. SEQUENTIAL AGC SYSTEM FOR SIGNAL RECEIVER.

3,665,339. SELF-PULSED MICROWAVE OSCILLATOR.

3,665,504. CHECKING AN AUTOMATIC TESTING SYSTEM.

3,665,570. METHOD FOR MONITORING THE CAPACITANCE OF A CAPACITOR WHILE ADJUSTING ITS CAPACITANCE.

3,666,153. TAPE PLAYER WITH FAST TAPE WINDING MECHANISM.

3,666,359. CORRELATION PEAK DETECTOR IN OPTICAL SPATIAL FILTERING SYSTEM.

3,666,527. METHOD OF ELECTROLESS DEPOSITION OF METALS WITH IMPROVED SENSITIZER.

3,666,573. METHOD FOR MAKING TRANSISTORS INCLUDING GAIN DETERMINING STEP.

3,667,007. SEMICONDUCTOR ELECTRON EMITTER.

3,667,008. SEMICONDUCTOR DEVICE EMPLOYING TWO-METAL CONTACT AND POLYCRYSTALLINE ISOLATION MEANS.

3,667,060. BALANCED ANGLE MODULATION DETECTOR.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
Deputy Assistant Commissioner (Vacant)

CONDITION OF PATENT APPLICATIONS AS OF JULY 5, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-14-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocylic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-21-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-02-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-01-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	7-26-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-07-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	9-01-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-20-71
PHYSICS, GROUP 280—Director (Vacant). Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	5-05-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	2-05-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vechicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	7-16-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-02-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	7-16-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	6-01-71

Expiration of patents: The patents within the range of numbers indicated below expire during July 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,712,131 to 2,714,200, inclusive
Plant Patents..... Numbers 1,404 to 1,407, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JULY 25, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T900,014
SEPARATION OF N-ISOPROPYLACRYLAMIDE FROM SULFURIC ACID SOLUTIONS THEREOF

Hans K. Dietl, Rte. 8, Seneca Road 37664, and Alan E. Lewis, 814 Afton St. 37660, both of Kingsport, Tenn.

Filed Sept. 25, 1970, Ser. No. 75,423
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 N
1 Sheet Drawing. 11 Pages Specification

N-isopropylacrylamide is produced by reaction between acrylonitrile and isopropyl alcohol in concentrated sulfuric acid. In order for the n-isopropylacrylamide to be used in various industrial processes it must be isolated from its sulfuric acid solution. This may be accomplished by (1) dilution of the solution with water, (2) extracting the n-isopropylacrylamide content of the dilute solution with an organic solvent for n-isopropylacrylamide such as methylene chloride or chloroform, and (3) evaporating off the solvent from the n-isopropylacrylamide-solvent solution, whereby pure n-isopropylacrylamide is obtained.

T900,015
PROCESS FOR PREPARING TRIMETHYLHYDROQUINONE

John G. Thweatt, Rte. 11 37462, and Fred H. Rash, 510 Whispering Way 37663, both of Kingsport, Tenn.

Filed Oct. 1, 1970, Ser. No. 77,377
Int. Cl. C07c *39/08, 69/16*
U.S. Cl. 260—621 R
No Drawing. 9 Pages Specification

Process for preparing trimethylhydroquinone by contacting 2,6,6-trimethylcyclohex-2-ene-1,4-dione with an acylating agent in the presence of an acid catalyst. Trimethylhydroquinone diester is formed first, which may be hydrolyzed by treatment with aqueous acid or base. When the hydrolysis mixture cools, trimethylhydroquinone may be separated therefrom.

T900,016
HOT MELT CARPET BACKING ADHESIVES AND ARTICLE OF MANUFACTURE AND PROCESS

James E. Dickert and William D. McGillen, both of Box 511, Kingsport, Tenn. 37462

Continuation of abandoned application Ser. No. 790,871, Jan. 13, 1969. This application Oct. 14, 1970, Ser. No. 80,796
Int. Cl. C08d *9/12*; C08f
U.S. Cl. 260—27
No Drawing. 15 Pages Specification

Hot melt carpet backing adhesives comprising a blend of from about 20 to about 60 parts of amorphous polypropylene, from about 10 to about 50 parts of polyethylene having a melt index of from about 10 to about 350 and from about 10 to about 50 parts of tackifying material including polyterpene resins, tall oil rosins, wood rosins, hydrogenated wood rosins, rosin esters and hydrocarbon resins. These adhesives have been found to greatly improve the manufacture of carpets and the carpet structure itself.

T900,017
STRIPPABLE COATING COMPOSITION

Travis L. Gordy, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation of application Ser. No. 780,260, Nov. 29, 1968. This application Mar. 22, 1971, Ser. No. 126,978
Int. Cl. B65b *33/00, 33/04*
U.S. Cl. 117—6
No Drawing. 16 Pages Specification

Compositions are described which are useful for providing a strippable protective coating on various substrates (e.g. automobile moldings). The compositions comprise petroleum wax, ethylene-isobutyl acrylate copolymer, ethylene-vinyl acetate copolymer and a rosin ester. Suitable ethylene-isboutyl acrylate copolymers contain about 20 to about 32 weight percent isobutyl acrylate and have a melt index of about 0.5 to about 260. Suitable ethylene-vinyl acetate copolymers contain about 18 to about 29 percent by weight vinyl acetate and have a melt index of from about 0.5 to about 250. Suitable rosin esters are the glycerol and pentaerythritol ester of rosins such as pale wood rosin, hydrogenated rosin and polymerized rosin. The substrate can be made of aluminum, anodized aluminum, painted aluminum, stainless steel, vinyl, acrylonitrile-butadiene-styrene (ABS) polymer or various combinations of these materials. The various materials can be present in the following amounts (parts by weight): petroleum wax—30 to 60; ethylene-isobutyl acrylate copolymer—15 to 40; ethylene-vinyl acetate copolymer—10 to 40; rosin esters—5 to 20.

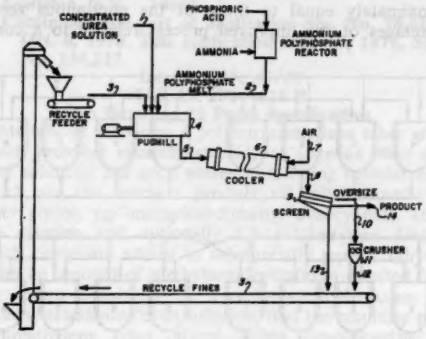
T900,018
UREA-AMMONIUM POLYPHOSPHATE PRODUCTION

Robert G. Lee, 109 Augusta St., Florence, Ala. 35630, and Robert D. Mitchell, 102 Oak Hill Ave., Sheffield, Ala. 35660

Filed Apr. 1, 1971, Ser. No. 130,236
Int. Cl. C05b *15/00*
U.S. Cl. 71—29
1 Sheet Drawing. 16 Pages Specification

Pugmill (or blunger) granulation process for the production of high-analysis fertilizers composed of urea and ammonium polyphosphate. Concentrated urea solution (95–100%) and anhydrous molten ammonium polyphosphate are granulated in a pugmill in the presence of recycled solids. The moisture content of the product is sufficiently low to eliminate the need for a dryer in the process. The urea solution is sprayed onto the recycle in the pugmill upstream from the ammonium polyphosphate melt, allowing the urea to be overcoated with the melt and preventing subsequent dusting off of urea. The points of entry of the urea solution and the melt into the pugmill are separated by a minimum of 12 inches to prevent hydrolysis of the urea by the melt which results in foaming and gas evolution. Solid urea may also be used with the ammonium polyphosphate melt, which is produced from either electric-furnace or wet-process superphosphoric acid or, alternatively, from merchant-grade wet-process acid by the direct process utilizing the heat

of reaction of ammonia with the acid to form polyphosphate. Other fertilizer materials such as ammonium sulfate, potassium chloride, or micronutrient sources may be incorporated by adding them to the pugmill during granulation.

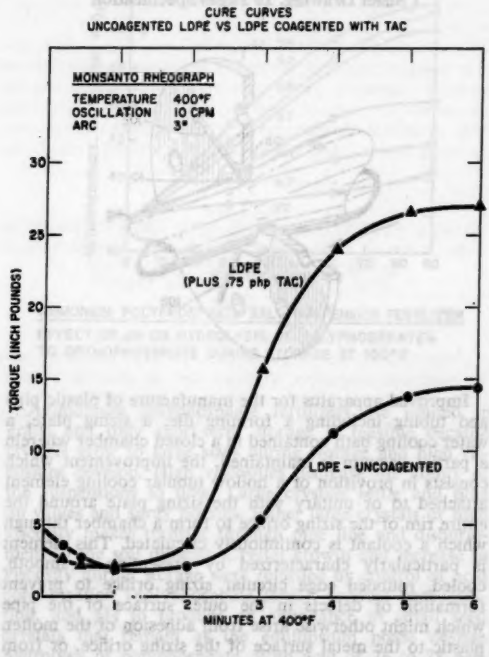


FLOWSHEET OF UREA-AMMONIUM POLYPHOSPHATE PILOT PLANT

T900,019
POLYETHYLENE

John J. Murphy, Jr., 719 Springfield Ave., Cranford, N.J. 07016; Winthrope C. Smith, 430 Kimball Turn, Westfield, N.J. 07090; and William D. Marsh, 91 Cranford Ave., Cranford, N.J. 07016

Filed Apr. 19, 1971, Ser. No. 135,207
Int. Cl. C08f *27/00, 29/04*
U.S. Cl. 260—878 R
2 Sheets Drawing. 17 Pages Specification

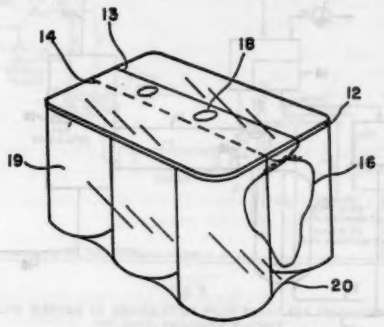


Peroxide cured polyethylene homo- and copolymers having improved physical properties, i.e. greatly reduced void formation and increased cure rate and state, are prepared by incorporation of minor amounts of EPDM's and/or coagents such as triallyl cyanurate, trimethylol propane trimethacrylate, ethylene dimethacrylate, m-phenylene bis maleimide, etc. These cured polymers are useful as electrical insulators, e.g. for high voltage wire and cable.

T900,020
SLEEVE-WRAPPED PACKAGE AND METHOD OF PREPARING SAME

John Quincy Britt and William Owrey Griffiths, Greenville, and Milton Albert Howe, Jr., Spartanburg, S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Continuation of application Ser. No. 786,028, Dec. 23, 1968. This application Apr. 21, 1971, Ser. No. 136,164
Int. Cl. B65d *65/16, 71/00, 85/62*
U.S. Cl. 206—65 S
4 Sheets Drawing. 7 Pages Specification



A package comprising at least one article enclosed in an open ended sleeve of shrinkable material can be prepared by overlapping the opposed ends of a sheet of film to form a tube or sleeve in which the article is positioned, the ends of the tube extending beyond the ends of the article. Only that portion of the seam which is adjacent to a lateral surface of the article is sealed. After the partial sealing, the tubing is heat shrunk about the article leaving the end openings of the tube reduced in size. The portions of the seam adjacent the ends of the article which have not been sealed terminate in the periphery of the openings and form convenient tear tabs.

T900,021
METHOD FOR PREPARING FIRE RETARDANT POLYESTER FIBERS

John R. Caldwell, 404 Colonial Heights Road 37663, and Winston J. Jackson, Jr., 4408 Green Springs Circle 37664, both of Kingsport, Tenn.

Continuation-in-part of application Ser. No. 790,870, Jan. 13, 1969. This application May 11, 1971, Ser. No. 142,356
Int. Cl. B32b *27/36;* C09k *3/28*
U.S. Cl. 117—136
No Drawing. 24 Pages Specification

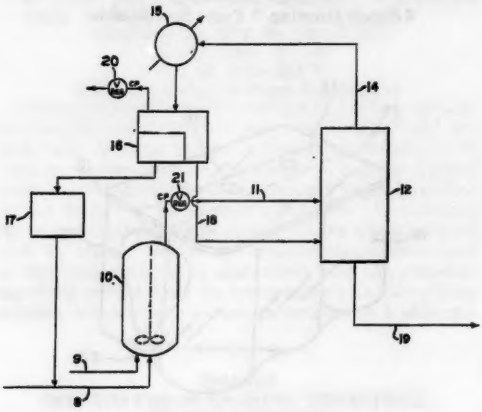
Disclosed is a process for preparing fire retardant polyester fibers comprising applying to the surface of the polyester fiber an organic bromine compound that does not chemically react with the polyester and subsequently heating the fiber in a temperature range of about 175 to about 220° C. to diffuse the organic bromine compound into the fiber. Advantageously, the toughness of the fiber is reduced not more than 30.0% by this process and the organic bromine compound is retained in the fiber after laundering and dry cleaning. Poly(ethylene terephthalate) and poly(1,4-cyclohexylenedimethylene terephthalate)

fibers are particularly desirable polyester fibers. Tris(2,3-dibromopropyl) phosphate is a particularly desirable organic bromine compound.

T900,022
POLYMERIZATION PROCESS

Charles R. Johnson and Warren E. Jones, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 655,929, July 25, 1967. This application May 13, 1971, Ser. No. 143,170
Int. Cl. C08f *1/74*
U.S. Cl. 260—80.7
1 Sheet Drawing. 8 Pages Specification



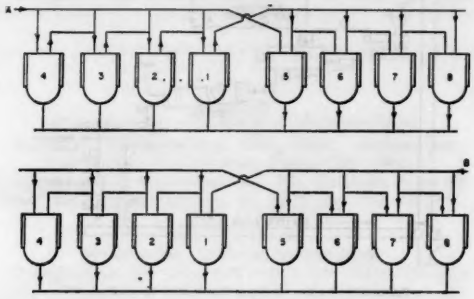
The process of continuous solution of polymerization, in the substantial absence of water, of 1,3-butadiene alone, with either isoprene or styrene, or all three materials together which comprises the steps of continuously introducing this material, a lithium catalyst, 1,2-butadiene as a modifier and an inert solvent such as hexane into at least one reactor wherein the polymerization of the material takes place. Transferring the polymerized material, solvent and unreacted modifier in the substantial absence of water directly to means for vaporizing volatile material whereat an amount of solvent and modifier is vaporized overhead. The amount of solvent and modifier vaporized is enough to increase the concentration of the polymerized material in the solvent at least 5%. The vaporized solvent and modifier is condensed and recycled into the reactor along with the continuous introduction of the monomeric material. The amount of 1,2-butadiene recycled is at least 50% of the unreacted 1,2-butadiene. The polymerized material is removed in the solvent from the vaporizing means.

T900,023
CHLOROPRENE POLYMERIZATION PROCESS

Edwin Benjamins, Montague, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 25, 1971, Ser. No. 146,728
Int. Cl. C08d *1/09, 3/14*
U.S. Cl. 260—92.3
1 Sheet Drawing. 14 Pages Specification

Chloroprene is polymerized in aqueous emulsion by an improved process involving (1) initiating and conducting part of the polymerization in one reaction zone in which the polymerizaton is carried out in a continuous manner and (2) completing the polymerization in a second reaction zone in which the polymerization is carried out in a batchwise manner. The continuous zone consists of at least two agitated, confined, interconnected reaction vessels and the batch zone consists of at least an equal number of similarly defined vessels having volumes approximately equal to those of the continuous zone. Advantages of the improved process relative to a com-

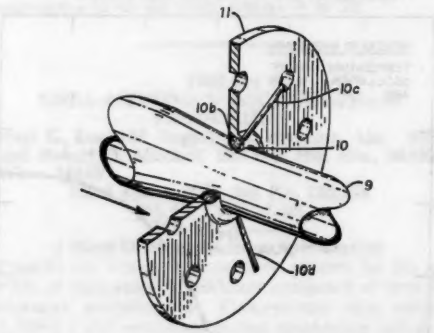


pletely continuous process are increased productive capacity, better control of the polymer viscosity, and greater access to the polymerization equipment for purposes of cleaning. Relative to a completely batch process the improved process has the advantage of permitting more accurate control of conversion of monomer to polymer.

T900,024
EXTRUSION APPARATUS FOR MANUFACTURE OF THERMOPLASTIC PIPE

Edward R. Hollander, Jr., 124 Bloomingdale Pike, Apt. 27, Kingsport, Tenn. 37660

Filed June 1, 1971, Ser. No. 148,566
Int. Cl. B29d *23/04*
U.S. Cl. 18—14 A
1 Sheet Drawing. 10 Pages Specification



Improved apparatus for the manufacture of plastic pipe and tubing including a forming die, a sizing plate, a water cooling bath contained in a closed chamber wherein a partial vacuum is maintained, the improvement which consists in provision of a hollow tubular cooling element attached to or unitary with the sizing plate around the entire rim of the sizing orifice to form a chamber through which a coolant is continuously circulated. This element is particularly characterized by presenting a smooth, cooled, rounded edge circular sizing orifice to prevent formation of defects in the outer surface of the pipe which might otherwise arise from adhesion of the molten plastic to the metal surface of the sizing orifice, or from irregularities in the surface of an unrounded orifice, thus eliminating the need for employment of any type of lubricant at the sizing orifice.

T900,025
POLYTETRAMETHYLENE ETHER GLYCOL

Melvin C. Baker, 377 Howard Drive, Youngstown, N.Y. 14174, and Arthur O. Rogers, 981 Escarpment Drive, Lewiston, N.Y. 14092

Continuation-in-part of application Ser. No. 78,619, Oct. 6, 1970. This application June 17, 1971, Ser. No. 154,217

Int. Cl. C07c *43/00*
U.S. Cl. 260—615 B
No Drawing. 12 Pages Specification

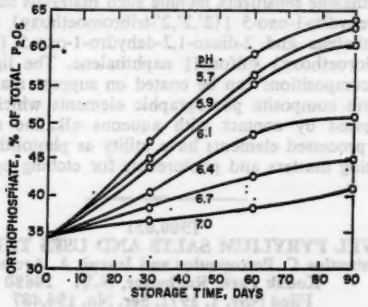
Method of preparing a polytetramethylene ether glycol which provides viscosity stability to spandex fiber spinning solutions and good power to resulting spandex fibers which are the reaction product of polytetramethylene ether glycol, p,p'-methylenediphenyl diisocyanate, ethylene diamine and optionally 1,3-cyclohexylene diamine which comprises adding to substantially pure tetrahydrofuran an amount of methyltetrahydrofuran selected from the group consisting of 2-methyltetrahydrofuran and 3-methyltetrahydrofuran sufficient that the resulting polytetramethylene ether glycol, when depolymerized, is analyzed to contain 100 to 1000 parts per million of methyltetrahydrofuran, and polymerizing the resulting mixture to polytetramethylene ether glycol having a molecular weight of 750 to 4000.

T900,026
SUSPENSIONS

Thomas M. Jones, 208 Stephenson Court, Sheffield, Ala. 35660

Continuation-in-part of application Ser. No. 741,099, June 28, 1968. This application June 21, 1971, Ser. No. 154,772

Int. Cl. C05b *7/00*
U.S. Cl. 71—34
1 Sheet Drawing. 57 Pages Specification



AMMONIUM POLYPHOSPHATE SALT SUSPENSION FERTILIZER
EFFECT OF pH ON HYDROLYSIS OF POLYPHOSPHATES TO ORTHOPHOSPHATE DURING STORAGE AT 100° F.

Ammonium polyphosphate fertilizers are limited in grade and only short-term storage is feasible because crystals grow to large sizes during storage and high viscosities develop. High viscosities decrease the ability of the suspensions to flow. Large crystals settle and plug up valves and spray nozzles. Either large crystals or high viscosity makes transfer through pipe line and disbursement to the soil difficult. Crystal growth and increase in viscosity during storage were retarded by control of acid concentration (polyphosphate level), product concentration, and pH to produce an abundance of small seed crystals that remain as the equilibrium phase despite hydrolysis of polyphosphate. With acid of 76 to 78 percent P_2O_5 content, ammoniation to pH 5.0 to 5.4 resulted in monoammonium phosphate ($NH_4H_2PO_4$) as the equilibrium phase. Ammoniation to pH 6.3 to 7.0 resulted in a diammonium phopshate [$(NH_4)_2HPO_4$] as the equilibrium phase. Typical products were 11–45–0 (pH 5.2) or 13–41–0 and 14–44–0 (pH 6.4). Higher acid concentrations or ammoniation in the pH range 5.6 to 6.0 resulted in unstable crystal phases. Satisfactory high-grade, three-component suspensions with good storage properties may also be produced by this procedure.

T900,027
PRODUCTION OF UREA-AMMONIUM SULFATE

Horace C. Mann, Jr., 1942 Holiday Drive, Florence, Ala. 35630

Filed June 21, 1971, Ser. No. 155,133
Int. Cl. C05c *9/00*
U.S. Cl. 71—28
3 Sheets Drawing. 19 Pages Specification

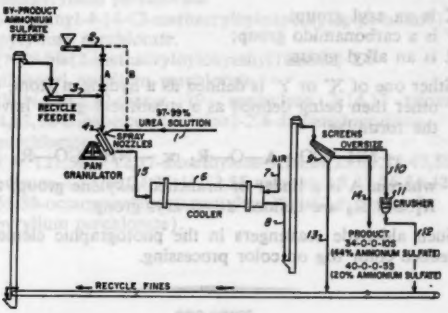


Fig. 3
FLOW DIAGRAM OF GRANULATION PILOT PLANT FOR PRODUCTION OF UREA-AMMONIUM SULFATE

A process for the production of urea-ammonium sulfate granules from urea and ammonium sulfate by several granulation methods. The proportion of ammonium sulfate in the mixture was varied from 15 to 70 percent by weight resulting in products containing from 42 to 29 percent N and 3 to 17 percent S, respectively. Unexpectedly, the urea-ammonium sulfate mixture in these proportions were fluid enough at 250° to 325° F. to be prilled and granulated by conventional meahs. Typical grades made in continuous-type pilot-plant work were 40–0–0–4S, 34–0–0–9S, and 30–0–0–13S. Most granulation was carried out by oil prilling or in a pugmill but any type of granulation method, such as air prilling or in drum or flaker, likely would be feasible. With use of 99.5 percent urea solution and solid ammonium sulfate, no drying step would be required. The presence of the ammonium sulfate increased the strength of the granules significantly.

No caking occurred when unconditioned 30–0–0–9S prills were stored in bulk for 6 months. Unconditioned product of 40–0–0–4S grade caked in 3 months but storage for this period was satisfactory when 2 percent by weight of kaolin clay conditioner was used. The critical relative humidity of these products was in the range 55 to 60 percent at 86° F.

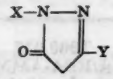
T900,028
METHOD FOR PROTECTING PHOTOGRAPHIC FILM AGAINST ALDEHYDES

Kent R. Rush, Rochester, N.Y. 14626

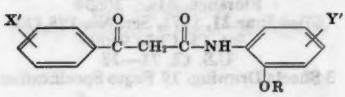
Filed July 1, 1971, Ser. No. 159,028
Int. Cl. G03c *1/76*
U.S. Cl. 96—74
No Drawing. 38 Pages Specification

Adverse sensitometric effects resulting from contamination of color photographic elements containing silver

halide emulsion layers with aldehyde vapor prior to exposure and processing can be substantially reduced or eliminated by incorporating into non-light sensitive layers as aldehyde scavengers certain 1,3-disubstituted pyrazolones or benzoylacet-o-alkoxyanilides exemplified by compounds of the formulae



or



wherein

X is an aryl group;
Y is a carbonamido group;
R is an alkyl group;

either one of X' or Y' is defined as a hydrogen atom, the other then being defined as a substituent group having the formulae

—NH—CO—A—O—R_1 or —NH—CO—R_2

wherein A is a linear or branched alkylene group; and R_1 and R_2 are defined as an aryl group.

Such aldehyde scavengers in the photographic elements reduce color fog on color processing.

T900,029
COLOR DIFFUSION TRANSFER PROCESS
Charles R. Barr, Kodak Park Works, Rochester, N.Y. 14626
Filed July 6, 1971, Ser. No. 160,132
Int. Cl. G03c 7/00
U.S. Cl. 96—3
No Drawing. 44 Pages Specification

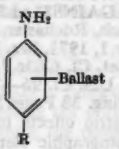
A color diffusion transfer process is described wherein:

(A) a photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer containing
  (a) a nondiffusible coupler capable of reacting with an oxidized aromatic primary amine to release a diffusible dye or dye precursor, and
  (b) a nondiffusible aromatic primary amine, is exposed;
(B) the photographic element is then treated with a silver halide developing agent to effect development and thereby oxidize the developing agent;
(C) the oxidized developing agent then cross-oxidizing the amine;
(D) the oxidized amine then reacting with the nondiffusible coupler to release a diffusible dye or dye precursor imagewise as a function of the imagewise exposure of each emulsion layer; and
(E) at least a portion of each of the imagewise distributions of diffusible dye or dye precursor diffusing to a dye image-receiving layer to provide a transfer image.

Preferred nondiffusible couplers have the formula:

DYE-LINKING GROUP-BALLASTED COUPLER

Preferred nondiffusible amines have the formula:



wherein R can be (1) OR^1 wherein R^1 is H or a hydrolyzable moiety, or (2)

wherein R^2 and R^3 are each H or alkyl.

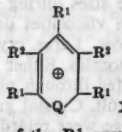
The nondiffusible coupler and nondiffusible amine could also be combined into a single compound.

T900,030
LIGHT-SENSITIVE COMPOSITIONS AND PHOTOGRAPHIC ELEMENTS
David A. Thomas, 19 St. Thomas Drive, Hatch End, Pinner, Middlesex, England, and Colin Holstead, 59 Kindersley Way, Abbotts Langley, Hertfordshire, England
Filed July 6, 1971, Ser. No. 160,160
Claims priority, application Great Britain, Oct. 15, 1970, 49,106/70
Int. Cl. G03c 5/24
U.S. Cl. 96—48
No Drawing. 23 Pages Specification

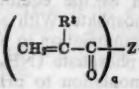
Light-sensitive compositions including a polymer of the type (e.g. polymers including acryloylpeptide units as described in Canadian Pat. 786,748 and polymers derived from a polyol and an unsaturated polycarboxylic acid as described in Canadian Pat. 837,083) that is reactable with a sensitizer when exposed to light in combination with a sensitizing amount of naphthalene sensitizer having ortho diazo and oxo substituents at the 1,2 or the 2,1 positions of the naphthalene nucleus and further having an alkoxysulfonyl group, the terminal carbon atom of which is trihalo (preferably chloro and bromo) substituted, and wherein the sulfonyl moiety is bonded directly to the naphthalene nucleus at the 4 or the 5-position, are advantageous in the preparation of positive-working photolithographic materials. Desirable such naphthalene sensitizers include such materials as 2-diazo-1,2-dehydro-1-oxo-5 [(2',2',2'-tribromoethoxy) sulfonyl] naphthalene and 2-diazo-1,2-dehydro-1-oxo-5 [(2',2',2'-trichloroethoxy) sulfonyl] naphthalene. The light-sensitive compositions can be coated on support materials to prepare composite photographic elements which can be processed by contact with aqueous alkaline solutions. The processed elements have utility as photolithographic printing masters and photoresists for etching operations.

T900,031
NOVEL PYRYLIUM SALTS AND USES THEREFOR
Constantine C. Petropoulos and Joseph A. Arcesi, both of Kodak Park, Rochester, N.Y. 14650
Filed Nov. 1, 1971, Ser. No. 194,487
Int. Cl. G03g 5/06
U.S. Cl. 96—1.5
No Drawing. 25 Pages Specification

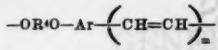
Vinyl substituted pyrylium salts are useful as sensitizers in electrophotographic systems and in photopolymerizable systems as either sensitizers, initiators or photopolymerizable monomers. The salts can be represented by the formula:

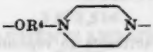


wherein at least one of the R^1 groups is an acrylic group appended to the pyrylium nucleus through a linking group, said R^1 group preferably having the structure:

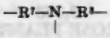


wherein q is 1 or 2, R^3 is hydrogen or a methyl group and —Z— is a divalent or trivalent linking group selected from

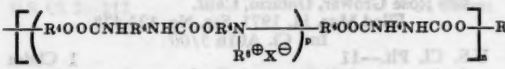




and



wherein each R^7 and R^8 independently has the structure:



wherein the linking group is attached to the

group through its terminal oxygen atom and to the pyrylium nucleus at the other end; m and n are each 0 or 1; p is 0 to 4; R^4 is an alkylene group having 2 to 10 carbon atoms; R^6 is a 2- or 4-pyrylium or thiapyrylium nucleus; Ar is an arylene group; the remaining R^1 groups are hydrogen, alkyl or aryl, preferably aryl, or are taken together with an adjacent R^2 group to represent the atoms necessary to complete a fused aromatic ring system; each R^2 is a hydrogen atom or is taken together with an adjacent R^1 to form a fused aromatic ring system; Q is —S— or —O—; and $X^{\ominus}$ is an anion. Representative pyrylium salts useful in this invention and having the above structure include:

2,6-diphenyl-4-[(4,2-methacryloyloxyethoxy)phenyl] pyrylium perchlorate.

2,6-diphenyl-4-[4-(2-methacryloyloxyethoxy)phenyl] pyrylium perchlorate.

2,6-diphenyl-4-(4-methacrylamidophenyl)thiapyrylium perchlorate.

4-[4-(2-methacryloyloxyethoxy)styryl]flavylium perchlorate.

2,6-diphenyl-4-[4-(2-methacryloyloxyethoxy)phenyl] thiapyrylium perchlorate.

2,6-diphenyl-4-[4-(2-methacryloyloxyethyl)piperazinyl] pyrylium perchlorate.

4-[N,N-bis(2-methacryloyloxyethyl)amino]-2,6-diphenyl pyrylium perchlorate.

4-[N,N-bis(5,12-diaza - 19 - methylene - 3,14,17 - trioxa-4,13,18-trioxoeicosyl)amino]-2,6-diphenylpyrylium perchlorate.

4,4′ - [21,38 - (2,57-dimethylene-9,16,21,25,33,38,43,50-octaaza-4,17,18,24,35,41,52,55-octaoxa-3,8,17,26,34,42,51,56-octaoxooctapentacontylene)]bis(2,6-diphenylpyrylium perchlorate).

PLANT PATENTS

GRANTED JULY 25, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,241

AFRICAN VIOLET

Hermann Holtkamp, 5–7 Werther Strasse, 19 Postfach, 4243 Isselburg, Germany

Original application Oct. 7, 1968, Ser. No. 765,700. Divided and this application Oct. 7, 1970, Ser. No. 79,000

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity throughout the life cycle.

3,242

ALMOND TREE

Frederic W. Anderson, Merced, Calif., assignor to Arthur Bright, Le Grand, Calif.

Filed Feb. 4, 1971, Ser. No. 112,835

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—30 **1 Claim**

An almond tree which is of large size, vigorous, open to dense, spreading to medium, abundant of foliage with large to medium size leaves, heavy of bloom with the blooming period two to three days after the Nonpareil (unpatented), and a regular bearer with heavy to medium productivity of large to medium size well-sealed nuts about the size of the IXL and Peerless (both unpatented), well distributed on the tree, and in harvest after the Nonpareil but before the Mission (unpatented) and about with the Ne Plus Ultra (unpatented).

3,243

ROSE PLANT

Herbert C. Swim and O. L. Weeks, Ontario, Calif., assignors to O. L. Weeks, doing business as Weeks Wholesale Rose Grower, Ontario, Calif.

Filed Mar. 11, 1971, Ser. No. 123,478

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an especially well-branched, tall and symmetrical plant habit, exceptionally good, heavy and semiglossy foliage which clothes the plant well and which has excellent resistance to powdery mildew, heavy stems of sufficient strength to hold all blooms erect, with a consequent pleasing complement to the attractive foliage, large flowers which are borne both singly and in clusters of 2 to 4 flowers, with an occasional cluster of 5 flowers, a distinctive, attractive and unusual coral-orange flower color, and a moderate and pleasing tea flower fragrance.

3,244

ROSE PLANT

Herbert C. Swim and O. L. Weeks, Ontario, Calif., assignors to O. L. Weeks, doing business as Weeks Wholesale Rose Grower, Ontario, Calif.

Filed Mar. 11, 1971, Ser. No. 123,479

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of Rose Plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a well-branched, symmetrical and tall plant habit, unusually strong and long cutting stems, better than average foliage substance and resistance to powdery mildew, a habit of bearing the flowers singly, with almost complete absence of cluster blooms, a medium to very large flower size of double and high-centered form, and a distinctive, attractive and unusual flower color, with the outside surface of the petals blending from medium pink to delicate pink and then to cream color at the base, and the inside surface of the petals being strong pink at their outer edges, blending to pale pink and then to cream color at the base, and the center of the fully opened flower having a most unusual brownish-lavender shade.

PATENTS

GRANTED JULY 25, 1972

GENERAL AND MECHANICAL

3,678,514

COMBINATION GARMENTS AND METHOD OF MAKING SAME

Sam C. Safrit, Winston-Salem, N.C., assignor to Hanes Corporation, Winston-Salem, N.C.

Filed Jan. 21, 1970, Ser. No. 4,707

Int. Cl. A41d *1/06, 1/14;* A41b *9/04*

U.S. Cl. 2—212 **31 Claims**

A combination garment and method of making same wherein a pair of tubularly knit blanks each having integrally knit leg, panty and cover portions are secured together by a continuous seam or integrally formed, and the cover portions are turned outwardly and downwardly over the panty and leg portions to form outerwear garments attached to conventional innerwear garments.

3,678,515

PANTY-HOSE

Nicholas Wehrmann, North Wilkesboro, N.C., assignor to Ithaca Textiles, Inc., Ithaca, N.Y.

Filed Sept. 2, 1970, Ser. No. 68,996

Int. Cl. A41b *9/04*

U.S. Cl. 2—224 R **11 Claims**

A unitary piece of knit fabric forms the main body portion and the crotch portion of a panty having at opposite sides, respectively, two vertical seams extending from the upper to the lower edge of the main portion, the two panty portions being integral (without any interconnecting seam) and defining leg openings; and an elastic waist band may be seamed to the main body portion along its upper edge. A pair of stockings of knit fabric are joined at their upper ends by expandible seams to the panty around the respective leg openings. The panty fabric offers substantially greater resistance to lateral stretch than the stocking fabric, whereby the panty effectively resists downward displacement on the wearer's body under the increased tension created in the garment incident to bending movements of the wearer.

3,678,516

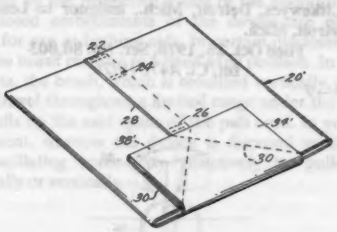
AUTOMATED PRODUCTION OF MEN'S BOXER SHORTS

Leonard N. Backer, Westport, Conn., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Aug. 10, 1970, Ser. No. 62,556

Int. Cl. A41b *9/02*

U.S. Cl. 2—224 R **6 Claims**



Simplified men's boxer shorts made by folding an elongated web of sheet material so that the side edges overlap to form a tube, severing a section from the tube, securing together portions of the overlapped section edges to define a fly front, folding back the overlapped edges below the fly to form flaps, securing a separate crotch patch to edge portions of the flaps and to the back end edge of the section between the flaps, and securing an elastic waist band to the section. In an alternative embodiment of one-piece construction the tube is cut so that the crotch patch is integral with the back end edge.

3,678,517

KNEE JOINT FOR PROSTHETIC APPLIANCE

Edwin Ehbrecht, 3429 Etzenborn 24, Germany

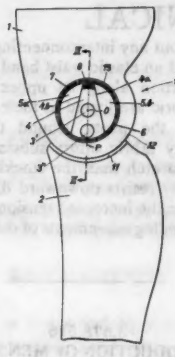
Filed Jan. 21, 1971, Ser. No. 108,480

Int. Cl. A61f *1/04, 1/08*

U.S. Cl. 3—27 **9 Claims**

An artificial leg with a thigh member and a shank member has an upwardly converging wedge fixedly secured to the shank member in a bearing cylinder rigid with the thigh member with interposition of two freely movable brake segments between the flanks of the wedge and the cylinder wall. When the weight of the user rests on the appliance, the cylinder is lowered so that the wedge spreads the brake seg-

ments to rigidify the limb; when the weight is off, a spring raises the cylinder relatively to the wedge which thereupon



releases the brake segments from their cylinder-engaging position, thus allowing the shank to swing with reference to the thigh.

3,678,518

BUNK BED ASSEMBLY

Stanley Litkewycz, Detroit, Mich., assignor to Lear Siegler, Inc., Detroit, Mich.

Filed Oct. 26, 1970, Ser. No. 80,003

Int. Cl. A47c *19/20*

U.S. Cl. 5—9 **10 Claims**

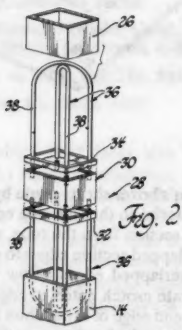


Fig. 2

A bunk bed assembly including a lower bed having a plurality of hollow support posts and an upper bed having a plurality of hollow support posts. A column means is disposed between a pair of posts of the respective beds and as a first end abutting a support post of the lower bed and a second end abutting a support post of the upper bed. A pair of U-shaped elements having a pair of legs and an interconnecting base with the legs thereof attached to the column means extend from each end of the column means and into the adjacent support posts.

3,678,519

HOSPITAL BED

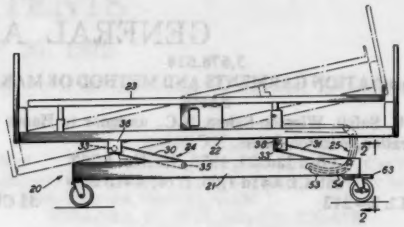
Robert J. Szucs, Midlothian, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed March 17, 1970, Ser. No. 20,182

Int. Cl. E03d *1/34*

U.S. Cl. 5—62 **1 Claim**

A hospital bed having a fixed frame and a movable frame, means for moving the movable frame in parallel relationship to the fixed frame and means for obtaining at least one



Trendelenburg position of the bed regardless of the relationship of the movable frame relative to the fixed frame.

3,678,520

ALTERNATING PRESSURE PADS FOR BED PATIENTS

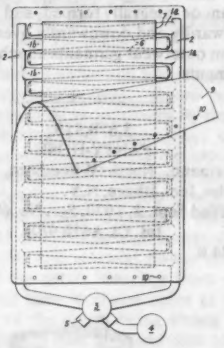
Ronald James Peter Evans, Bushey Heath, England, assignor to Talley Surgical Instruments Limited, Hertfordshire, England

Filed Dec. 14, 1970, Ser. No. 97,868

Claims priority, application Great Britain, March 13, 1970, 12,082/70

Int. Cl. A61g *7/10*; A47c *27/08*

U.S. Cl. 5—91 **8 Claims**



An air cell for use in an alternating pressure pad has a tube with its wall of flexible sheet material and at least the outermost half of the length of that tube, considered in the direction outwardly longitudinally from the longitudinal center of the tube, having its width increasing towards the remote end of the tube, a preferred form having the tube composed of two similar frusto-conical portions joined at their smaller ends.

3,678,521

COMPOUND TOOL FOR USE IN TEXTILE PAINTING

Francis W. Andrews, Clarcona; Philip S. Sussman, Orlando, both of Fla., and Sidney D. Barlow, Mount Vernon, N.Y., assignors to Mark-Tex Corporation, Englewood, N.J.

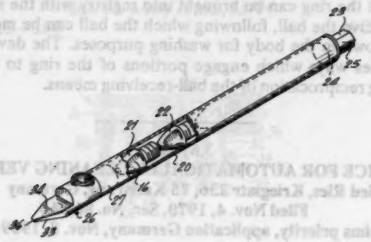
Filed Oct. 6, 1970, Ser. No. 78,485

Int. Cl. B25f *1/00*

U.S. Cl. 7—1 G **7 Claims**

A compound tool is used in connection with painting on tex-

tile sheets. It consists of a hollow body portion adapted to contain replacement tips for ball point color applying devices, a



wrench-like opening for the removal and replacement of such tips, and a spatula-like portion for the blending of the ink applied to the textile material.

3,678,522

SHAPING MACHINE FOR SHOE UPPERS

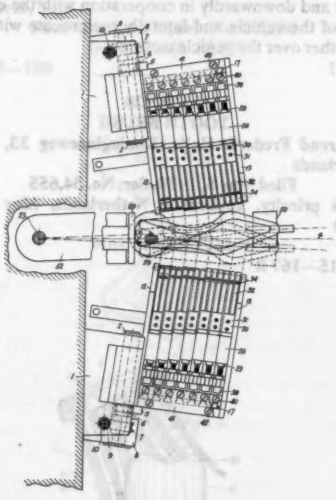
Karel Bumbatek, and Ladislav Olser, both of Gottwaldov, Czechoslovakia, assignors to Zavody presneho strojirenstvi Gottwaldov narodni podnik, Gottwaldov, Czechoslovakia

Filed Feb. 3, 1971, Ser. No. 112,121

Claims priority, application Czechoslovakia, April 28, 1970, 2920

Int. Cl. A43d *21/12*

U.S. Cl. 12—8.1 5 Claims



A shaping machine for shoe uppers over lasts, comprising stretching bands, where the stretching force of said stretching bands is for each wiping unit adjusted independently from the adjustment of the force pressing the lasting margin against the midsole in the course of their cementing, whereby the distance and relative height of each wiping unit with respect to the midsole is adjustable. A universal application of this machine for any kind and shape of shoes is thus achieved.

3,678,523

BRUSHING DEVICE

William F. Enchelmaier, 16 Oak Place, North Caldwell; Harvard W. K. Enchelmaier, 24 Kingwood Drive, Great Notch, and William J. Enchelmaier, 2 North Terrace, North Caldwell, all of N.J.

Filed May 27, 1970, Ser. No. 41,029

Int. Cl. A46b *13/08*; A61h *7/00*

U.S. Cl. 15—21 D 13 Claims

A brushing device having a manually driven brush rotatable about its longitudinal axis. The brush is oscillated by means of a pull cord wrapped around a pulley which is drivingly connected to the brush, at least one span of the pull cord extending directly from the pulley to be grasped by a hand of the operator. Preferably the cord has two such spans, which extend from opposite sides of the pulley, and which are engaged and pulled by the respective hands of the operator. Some of the disclosed embodiments of the device are particularly adapted for use as bathing aids. In certain disclosed embodiments, the brush remains in a fixed axial position. In other embodiments, the brush, which is mounted vertically, is free for vertical travel throughout a limited range under the influence of the pulls on the said spans of the pull cord. In yet another embodiment, wherein the device is disposed vertically, the brush oscillating cords may selectively be pulled either horizontally or vertically.

3,678,524

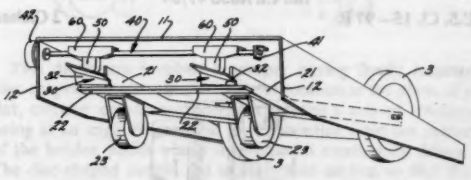
HEAVY DUTY VACUUM CLEANER

Wilfred C. Nise, Spring Lake, and Dale E. Lowder, Muskegon, both of Mich., assignors to Clark Floor Machine Company Division of Studebaker Corporation, Muskegon, Mich.

Filed March 19, 1970, Ser. No. 20,909

Int. Cl. A47l *11/00*, *5/34*

U.S. Cl. 15—49 17 Claims



A first frame is supported by wheels and a second frame is pivotally connected at one of its ends to the first frame on the axis of rotation of those wheels. Also secured to the first frame are a rotating horizontal-axis brush and other conventional features of a sweeper with vacuum. The free end of the second frame is supported by casters. Wedges are mounted at either side and on the top of the free end of the second frame. A threaded shaft is mounted on the first frame such that it passes over those wedges and carries blocks which engage the inclined surface of the wedges. The blocks travel across these inclined surfaces when the shaft is rotated, since they are restrained by channels from rotation with the shaft. The travel

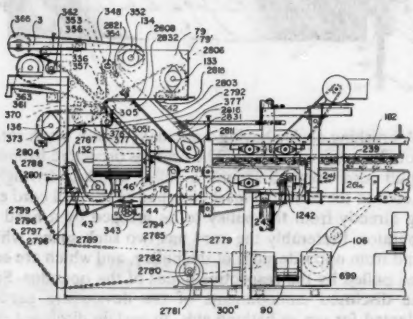
of the blocks adjusts the spacing between the first and second frames to raise and lower the first frame and its equipment with respect to the surface being treated while the angular relationship between the second frame and the floor remains substantially unchanged.

3,678,525

MACHINE FOR BRUSHING AND STACKING CARTON BLANKS

Allen H. Lloyd, Terrace Park, Ohio, and William J. Beckman, Fort Thomas, Ky., assignors to Tech-Art, Inc., Milford, Ohio

Filed Aug. 17, 1970, Ser. No. 64,211
Int. Cl. A46b *13/02*
U.S. Cl. 15—77 9 Claims



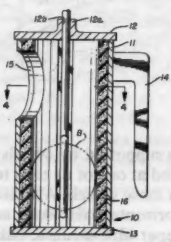
A machine which spreads carton blanks on a belt conveyor and brushes loose bits of paperboard from upper and lower faces of the carton blanks and edges of the carton blanks. The carton blanks are counted and then stacked on an elevator which is gradually lowered as a stack of carton blanks builds up on the elevator. The stack is then advanced onto a discharge conveyor where an outer carton can be placed over the stack of carton blanks. Finally, the stack and the outer carton are inverted on a turntable and the outer carton with the stack of carton blanks thereinside is discharged from the machine.

3,678,526

PORTABLE BALL WASHER

Charles R. Burkholder, 2944 Clearfield Ave., Akron, Ohio

Filed Dec. 10, 1970, Ser. No. 96,869
Int. Cl. A63b *47/04*
U.S. Cl. 15—97 R 2 Claims



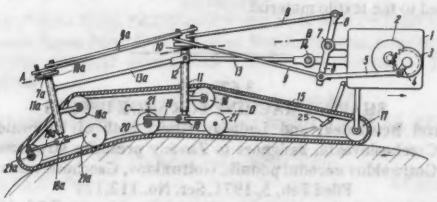
A portable ball washer which includes a hollow, cylindrical body having closed top and bottom ends and a through aperture in its wall of substantially the same dimensions as those of a golf ball. The inside of the washer is coated with foam material which has good water-retention qualities, and the device is also provided with a ball-receiving means which consist of an elongate stem having a gripping handle on one end and a ball-receiving ring on the other. The ball-receiving means are reciprocal along the longitudinal axis of the body, so that the ring can be brought into registry with the aperture to receive the ball, following which the ball can be moved up and down in the body for washing purposes. The device also includes ways which engage portions of the ring to guide it during reciprocation of the ball-receiving means.

3,678,527

DEVICE FOR AUTOMATICALLY CLEANING VEHICLES

Gotfried Ries, Kriegsstr 236, 75 Karlsruhe, Germany

Filed Nov. 4, 1970, Ser. No. 86,860
Claims priority, application Germany, Nov. 8, 1969, P 19 56 315.6
Int. Cl. B60s *3/06*
U.S. Cl. 15—99 11 Claims



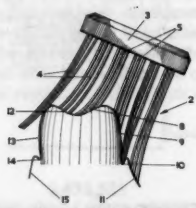
A device for automatically washing vehicles, such as motor vehicles and the like, consisting of a frame member supporting a plurality of adjacent endless belts having washing elements which rotate toward the vehicle. The washing elements move upwardly and downwardly in cooperation with the contoured surfaces of the vehicle and laterally reciprocate with respect to each other over the vehicle surfaces.

3,678,528

TOOTH BRUSH

Johan Arend Frederik Haije, Koninginneweg 33, Haarlem, Netherlands

Filed May 5, 1970, Ser. No. 34,655
Claims priority, application Netherlands, May 7, 1969, 6906990
Int. Cl. A46b *9/04*
U.S. Cl. 15—167 R 1 Claim



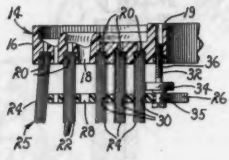
A toothbrush in which the length of the bristles varies with the longer bristles located on the outside and the shorter ones on the inside so as to define a longitudinal groove having a width about equal to half the clinical crown level and a depth about equal to half the width of the groove.

3,678,529

ADJUSTABLE BRUSH

John A. Woods, 517 W. San Gabriel, and Marvin G. Beck, 2004 N. Maple Ave., both of Fresno, Calif.

Filed July 6, 1970, Ser. No. 52,216
Int. Cl. A46b 13/02, 13/04
U.S. Cl. 15—180 4 Claims



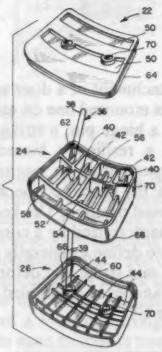
An adjustable brush particularly suited for use with machines adapted to employ rotary cleaning brushes, characterized by a plurality of concentrically related, annular arrays of tufts of bristles extended from a base plate and substantially terminating in a common plane. A particular feature of the brush resides in a provision of support plate selectively positioned between said base plate and said plane, including therewithin a multiplicity of annular arrays of tuft-receiving openings, and operatively suspended from said base plate by a plurality of screw-threaded studs adapted to be digitated for repositioning the support plate relative to the plane, whereby the trim length, or effective length of the bristles and, consequently their flexibility, selectively is varied.

3,678,530

ROTARY BRUSH PLASTIC BRISTLE HOLDER AND MOUNTING MEANS

John P. Horton, Bernardsville, and Troy S. Sulser, Union, both of N.J., assignors to Danline Manufacturing Company, Kenilworth, N.J.

Filed Oct. 2, 1970, Ser. No. 77,586
Int. Cl. A46b 13/02
U.S. Cl. 15—180 11 Claims



Disposable hollow plastic holders secure bent wire bristles in rotary brooms such as gutter brooms. Bristle bends are completely enclosed; bottom slots in the holders direct the bristles outward and downward. Holders are constructed in three sections bonded together to form smooth outer surfaces. Several holders are slid radially inward into inverted "T" shaped bars under a permanent plate. After all holders have been slid into place, an encircling retaining collar is dropped over the holders and is bolted to the plate.

3,678,531

ADAPTER FOR FLOOR MAINTENANCE MACHINES

Theodore Hill, Atlanta, Ga., assignor to B. J. Powell, Decatur, Ga., a part interest

Filed Feb. 17, 1971, Ser. No. 116,147
Int. Cl. A47l 11/14, 13/28
U.S. Cl. 15—230.19 8 Claims

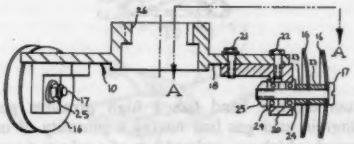
An adapter for floor maintenance machine to secure an accessory pad to the brush carried by the machine. The adapter includes a mounting bracket attached to the backing plate of the brush within the central opening in the bristles, a circular support plate carried by the mounting bracket in an adjustably spaced position with respect to the bracket and a circular clamping plate adapted to fit over the support plate to clamp the accessory pad between the support plate and clamping plate. A plurality of pins may be provided for extending through the accessory pad to selectively lock same against radial movement with respect to the brush and a venting means may be provided for supplying air to the motor of the maintenance machine.

3,678,532

ROTATING DISC SCRAPER

Reed L. Boyd, c/o John E. Wagner, Attorney at Law, 1041 E. Green St., Suite 202, Pasadena, Calif.

Filed April 6, 1970, Ser. No. 25,647
Int. Cl. B23c 7/00, 5/20
U.S. Cl. 15—236 7 Claims



This disclosure involves a scraper having freely rotating disc-shaped cutters with their axes of rotation in the plane of a flat, circular common holder; each cutter's axis of rotation being at an angle from radial lines extending from the center of the holder, about which the holder is rotationally driven. The disc-shaped cutters are of thin cross section so that the disc edges easily cut into tough or gummy surfaces as they are driven in circular patterns by the holder.

3,678,533

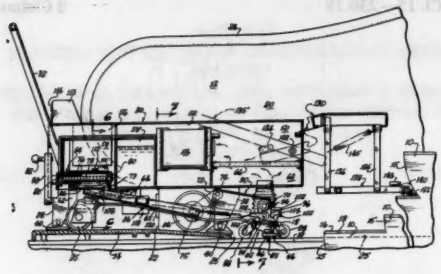
ESCALATOR CLEANING APPARATUS

Phillip Cravits, Burbank, Calif., assignor to Arnold B. London, Beverly Hills, Calif.

Division of Ser. No. 464,485, June 16, 1965, Pat. No. 3,584,329. This application Aug. 7, 1970, Ser. No. 62,109
Int. Cl. A47l 7/00
U.S. Cl. 15—302 4 Claims

An apparatus mounted on wheels incorporating brush means and spray means to clean the flights of an operating

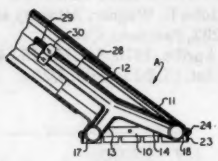
escalator has guide means to engage the fixed balustrades of the escalator for accurate positioning of the apparatus and has means to immobilize the apparatus for a cleaning operation. In response to such immobilization, a self-aligning vacuum nozzle and brush carriage is lowered into operating position. A yieldingly extensible forward structure makes guiding contact with front surfaces of descending flights of steps to brush the front and top surfaces thereof.



3,678,534
VACUUM CLEANER HEAD WITH SUPERSONIC GAS JETS

Jack H. Hilbig, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed July 6, 1970, Ser. No. 52,209
Int. Cl. A47l 9/08
U.S. Cl. 15—345 **8 Claims**



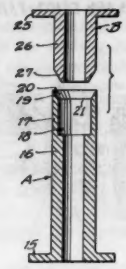
A vacuum cleaner head has a high pressure gas line mounted therein said gas line having a plurality of orifices therein through which are emitted jets of a selected gas, such as air, at supersonic speeds. The jets are so directed that shock waves produced by the jet streams and the jet streams themselves impinge upon a surface being cleaned so as to dislodge from such surface stubborn dirt particles for removal by a vacuum line communicating with the interior of the head.

3,678,535
SECTIONAL SANDWICH PANEL INSERT WITH FRICTIONAL TELESCOPIC COUPLING

James F. Charles, La Palma, Calif., assignor to Shur-lok Corporation, Santa Ana, Calif.

Filed Nov. 27, 1970, Ser. No. 93,266
Int. Cl. B65d 7/44
U.S. Cl. 16—2 **10 Claims**

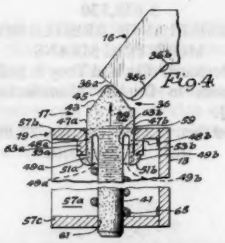
A grommet-like insert for sandwich panels consists of two tubular sections, one having a male tip forced into a counterbore in a female skirt on the end of the other section so as to expand the skirt past its elastic limit and into the plastic deformation range, thereby providing a high load bearing capacity. The strength of the coupling is increased by work-hardening which occurs in the expansion of the skirt with a limited compression of the male tip. The diameter of the expanded skirt is substantially increased, and its tip cooperates with the opposed grommet head to grip the panel skin between them to provide high shear resistance.



3,678,536
HINGE LATCH

Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed Jan. 12, 1970, Ser. No. 2,150
Int. Cl. E05d 11/10
U.S. Cl. 16—144 **11 Claims**



A hinge latch for attachment of a door to a cabinet including a pair of hinge parts mounted one on each of the door and cabinet and joined by a hinge pin, a strike carried on one of the hinge parts, and a resiliently biased keeper movably mounted within a keeper mounting assembly carried on the other of the hinge parts; the keeper cooperating with the strike to latch the door in closed position. The keeper is formed of a plastic material and characterized by a construction including a head portion shaped to define a generally wedge-shaped cam surface engageable by said strike and deformable leg portions adapted to secure the keeper in assembled relation within the keeper mounting assembly.

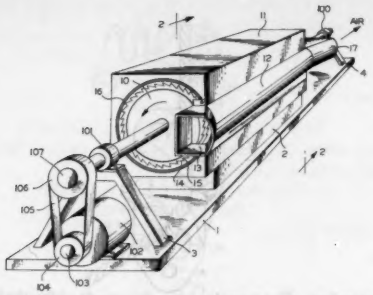
3,678,537
CARD COVER WITH FIBER CONVEYING AIR FLOW CHANNEL

Philip L. Rhodes, Chalmette, and Roger S. Brown, New Orleans, both of La., assignors to The United States of America as represented by the Secretary of Agriculture

Filed June 26, 1970, Ser. No. 50,218
Int. Cl. D01g 15/12
U.S. Cl. 19—98 **2 Claims**

A card cover less carding surfaces, comprising an air-flow channel of regular cross-section disposed transverse the card-

ing surface of a card cylinder, axially parallel and radially open thereto. The channel of the card cover when supplied



with a stream of air from an external air-flow inducing means acts to move fiber in a helical path across and around on operating card cylinder.

3,678,538

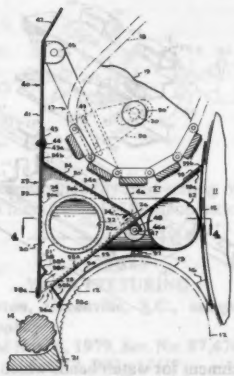
SUCTION MANIFOLD FOR THE LICKERIN SECTION OF A CARDING MACHINE

Donald A. Sloan, Winston-Salem, N.C., assignor to The Bahnson Company, Winston-Salem, N.C.

Filed Aug. 28, 1970, Ser. No. 67,914

Int. Cl. D01g *15/76*

U.S. Cl. 19—107 **17 Claims**



A suction manifold assembly to be disposed above the lickerin cover of a carding machine between the latter and the flats chain bight thereabove, defining a plenum chamber of triangular vertical cross-section spanning the width of the carding machine. A first suction intake slot is provided at the lower corner of the plenum chamber above the feed roll and an extension of the lower wall of the plenum chamber defines with another wall thereof a V-shaped trough having another suction intake slot at its apex to collect trash falling from the flats chain bight.

3,678,539

FASTENER PARTICULARLY FOR SKI OR MOUNTAINEERING BOOTS

Josef Graup, Klingenweg, 8260 Stein am Rhein, Switzerland

Filed Sept. 21, 1970, Ser. No. 73,877

Claims priority, application Austria, Oct. 3, 1969, A 9361/69

Int. Cl. A44b *21/00*; A43c *11/00*

U.S. Cl. 24—68 **3 Claims**

Fasteners for boots have a clip overlapping one of the side parts of the boot and engageable with a rack that is secured to the other side part of the boot, the rack being moveable across

the tongue portion of the boot by turning of a gear mating with the rack to bring the engaged clip into a boot tightening position. The fasteners are particularly useful for ski and mountaineering boots.

3,678,540

STRAP HOLDER CONSISTING OF TWO ELEMENTS

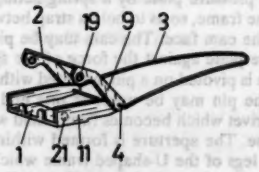
Josef Graup, Klingenweg, 8260 Stein am Rhein, Switzerland

Filed Feb. 25, 1970, Ser. No. 14,117

Claims priority, application Austria, March 3, 1969, A 2069/69

Int. Cl. A43c *11/14*

U.S. Cl. 24—70 SK **2 Claims**



Clasp for a strap in buckle-type fasteners for ski or mountain boots has first and second elements hinged together at one end to interlock at the other end with the end of the strap and a third element hinged to at least one of the first or second elements for engagement with the closure lever of the fastener.

3,678,541

BUCKLE CLOSURE FOR PLASTIC STRAPPING

Harold Lefkowitz, Levittown, N.Y., assignor to Delta Strapping Industries, Inc., Woodside, L.I., N.Y.

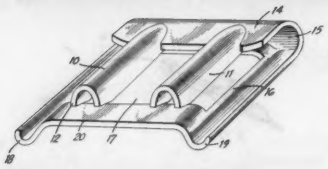
Filed June 1, 1970, Ser. No. 41,984

Int. Cl. A44b *11/00*

U.S. Cl. 24—74 **1 Claim**

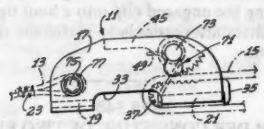
A buckle used as a strapping closure includes two parallel tapered prongs holding the strap. The prongs have adjacent open ends while their other ends are firmly connected to a

curved gusset. The gusset is integral with a frame having a central opening. The prongs extend across the opening and are



supported upon a ledge of the frame. The frame has curved U-shaped downwardly extending edges which are parallel to the prongs.

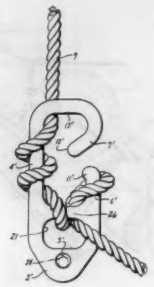
3,678,542
CAM BUCKLE
Ernest Prete, Jr., Woodland Hills, Calif., assignor to Ancra Corporation, El Segundo, Calif.
Filed June 17, 1970, Ser. No. 47,050
Int. Cl. A44b *11/12*; A43c *11/00*
U.S. Cl. 24—191 **3 Claims**



A buckle for fastening belts or straps, such as those used in cargo handling, comprising a substantially U-shaped frame providing a seat for a removable pressure plate having a serrated surface across a large portion of the face thereof. A cam, having a similarly serrated face thereon is biased toward the face of the pressure plate by a spring acting between a cam lever and the frame, so as to hold a strap between the pressure plate and the cam face. The cam may be pivoted away from the pressure plate against the force of the spring by the cam lever which is pivoted on a pin mounted within the frame. The shank of the pin may be upset at one end thereof so as to produce a rivet which becomes firmly held within an aperture in the frame. The aperture is formed within a depression on one of the legs of the U-shaped frame which causes the cam lever to be offset from the leg a sufficient distance to preclude the leg from obstructing the pivotal motion of the lever. Alternatively, the pin may extend through opposite keyhole slots in the legs of the frame. With the smaller portions of the slots at the upper ends thereof, the biasing spring acting on the cam causes the cam to force the pin upwards into the slot to maintain it within the frame.

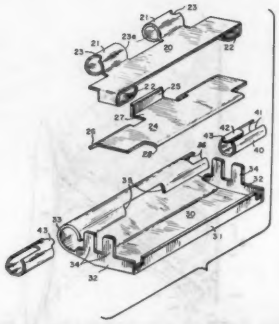
3,678,543
CONTROLLED PERSONAL DESCENT DEVICE
Edwin L. Hobbs, 10 Lance Court, Moraga, Calif.
Filed May 20, 1970, Ser. No. 39,078
Int. Cl. G01n *31/00*
U.S. Cl. 24—230 **2 Claims**

A device for use with a rope to lower persons or objects in a controlled descent down a rope at various speeds or even a complete stop, consisting of a metal article having an elongated member upon which the rope is wound several turns and an open passage located above a post upon which a portion of



the rope may be looped. The device having an enclosed opening for attachment to a harness or other fitting.

3,678,544
END ATTACHMENT FOR WATCH BANDS
Stephen F. Bert, West Warwick, R.I., assignor to Textron, Inc., Providence, R.I.
Filed April 30, 1971, Ser. No. 139,000
Int. Cl. A44c *5/18*
U.S. Cl. 24—265 B **13 Claims**

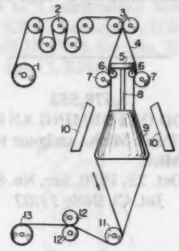


An end attachment for watch bands which permits use of a watch band with wrist watches having different spacings between their attachment lugs and which also may be quickly converted for use with watches which are either (i) rectangular when viewed from the top or (ii) round when viewed from the top. Also means for attaching an end attachment to a watch band which permits the end attachment to be quickly removed for repair or for substitution of another end attachment or for adjustment of the length of the watch band.

3,678,545
APPARATUS FOR STRETCHING A TUBULAR FILM OF THERMOPLASTIC SYNTHETIC POLYMERIC RESIN
Hiroyuki Hino; Hiroyoshi Asakuno, both of Ichiharashi, and Tetsuya Yamada, Chibashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan
Filed June 15, 1970, Ser. No. 46,047
Claims priority, application Japan, June 21, 1969, 44/49076
Int. Cl. B29d *7/24*; D06c *5/00*
U.S. Cl. 26—55 **4 Claims**

A suspended internal mandrel apparatus for stretching a tubular film of a thermoplastic resin which comprises a mandrel, a member extending upwardly from said mandrel to which two

spaced apart interior rolls are attached, and two exterior rolls disposed beneath said interior rolls and in abutting and supporting relationship therewith, said interior rolls, and exterior rolls and said member serving as the sole support means for said mandrel.



3,678,546

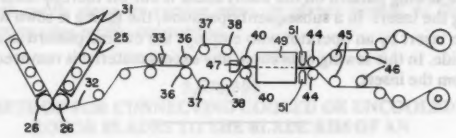
APPARATUS FOR HEAT-SETTING BIAXIALLY STRETCHED FILMS OF THERMOPLASTIC MATERIALS

Tomoyuki Matsugu; Ryota Notomi, and Teruchika Kanoh, all of Fuji, Japan, assignors to Kohjin Company, Limited, Tokyo, Japan

Division of Ser. No. 819,549, April 28, 1969, Pat. No. 3,577,497. This application Aug. 26, 1970, Ser. No. 67,008

Int. Cl. B29c *17/10*; B29d *23/04*

U.S. Cl. 26—63 **6 Claims**



Apparatus for simultaneously heat-setting of a pair of flat, biaxially oriented films formed of thermoplastic material.

3,678,547

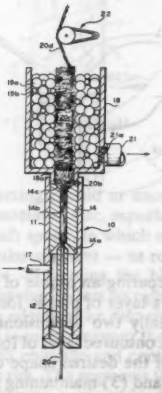
YARN TEXTURING

Richard C. Newton, Greenville, S.C., assignor to Phillips Petroleum Company

Filed Nov. 6, 1970, Ser. No. 87,476

Int. Cl. D02g *1/12*

U.S. Cl. 28—1.6 **15 Claims**



Yarn is textured by passage at an elevated temperature into a zone of turbulence. The resulting textured yarn is passed through a chamber which contains a plurality of stacked members, such as balls or rods. These members exert a force on the yarn to produce a confined wad. Fluid employed to produce the turbulence zone is separated from the textured yarn in the chamber.

3,678,548

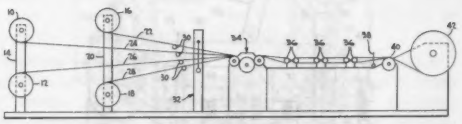
LEASING APPARATUS AND METHOD

Louis Largeron, and Roger Raquin, both of Arches, France, assignors to Societe Lorraine de Preparation Textile, Arches, France

Filed Nov. 12, 1970, Ser. No. 88,551

Int. Cl. D02h *9/00*

U.S. Cl. 28—40 **10 Claims**



Apparatus for forming a lease on a plurality of superposed sheets of warp yarns including a reed frame carrying a plurality of hooked dents with adjacent dents separating the warp yarns into groups, and a control system connected with the reed frame to move the hooked dents in a serpentine path through each group of warp yarns to capture and separate alternate ones thereof to form a lease. A method of forming a lease on a plurality of superposed sheets of warp yarns including positioning each one of the warp yarns of each sheet between adjacent ones of a plurality of dents to form a group of warp yarns and simultaneously moving the hooked dents around every other one of the warp yarns in each group to form a lease.

3,678,549

PROCESS FOR THE MANUFACTURE OF HIGH-BULK YARN

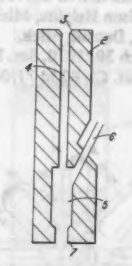
Michel Buzano, Villeurbanne, France, assignor to Societe Rhodiaceta, Paris, France

Filed March 17, 1969, Ser. No. 807,540

Claims priority, application France, March 18, 1969, 69144240

Int. Cl. D02g *1/16*

U.S. Cl. 28—72.12 **11 Claims**

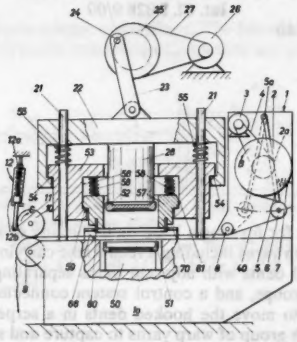


A high-bulk yarn having interlaced filaments substantially free from loops, and preferably having spherical knops affecting the yarn as a whole, is made by subjecting a continuous filament (or less preferably a staple fiber) yarn to the action of a turbulent fluid in a suitable nozzle, into which the yarn is fed non-axially so that it rubs against one wall thereof. If desired more than one yarn can be employed, making a single composite yarn. The invention includes also a nozzle, preferably having its yarn input opening flared to provide for the necessary friction of the yarn against the side of the nozzle.

3,678,550
APPARATUS FOR SEPARATING BLANKS FROM PLASTIC SHEETS

Gerhard Zuhlke, Geroldswil; Paul Brandli, Aurich, and Max Spalti, Zurich, all of Switzerland, assignors to Zuhlke & Brandli AG, Zurich, Switzerland

Division of Ser. No. 819,404, April 25, 1969, Pat. No. 3,623,209. This application March 16, 1971, Ser. No. 124,786
Claims priority, application Switzerland, Aug. 14, 1968, 12230/68; Nov. 5, 1968, 16434/68
Int. Cl. B23p 23/00, 19/00
U.S. Cl. 29—33 K 17 Claims

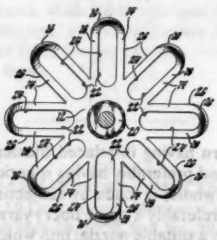


Mirrors for use by dentists or for similar purposes are produced by clamping a blank of strongly light-reflecting synthetic thermoplastic material between annular male and female mirror frame portions. Such clamping step is carried out simultaneously with separation of the blank from a web of sheet material which is maintained in a flattened and stretched condition and is weakened in the zone around the blank by a welding electrode which softens the material of the web and penetrates into the thus softened material by being biased toward a supporting surface located opposite the electrode. The male mirror frame portion serves as a means for tearing the blank from the weakened zone and for simultaneously moving the marginal portion of the thus separated blank against the internal surface of the female mirror frame portion.

3,678,551
BLENDING DEVICE

Alex J. Pietroski, Madison Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed March 30, 1970, Ser. No. 23,790
Int. Cl. B23d 71/00
U.S. Cl. 29—78 2 Claims

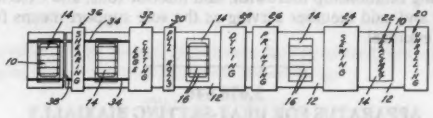


A blending device for soft filler material including a support member with a plurality of continuous cutting edges thereon. One form of the device includes a harder member with a hemispherical portion having a plurality of continuous cutting edges thereon formed by the intersection of a plurality of openings through the member. The hemispherical portion of the member minimizes ditching or edge cutting in the surface being worked on.

3,678,552
METHOD OF FORMING AN INSERT

Kurt J. Hertz, Oak Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 23, 1970, Ser. No. 83,573
Int. Cl. B68g 13/02
U.S. Cl. 29—91.1 9 Claims

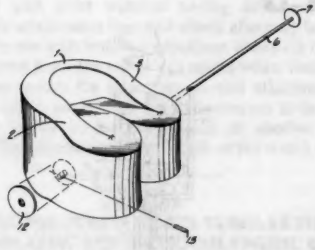


An insert, which may have a facing sewn to the lateral edges thereof to form a seat cover, is formed in a processing method initiated by positioning an insert blank on a backing material. The insert blank is sewn to the backing material. An outline pattern for the sewing operation which joins the facing and the insert blank is printed on the exposed surface of the insert blank. Some of the discardable material lying outside the outline sewing pattern on the insert blank is cut-off thereby forming the insert. In a subsequent operation, the facing is sewn to the insert by an operator who employs the outline pattern as a guide. In this sewing operation, any excess material is removed from the insert.

3,678,553
PLASTIC FOAM FURNITURE

Marc S. Hermelin, c/o Sidney B. Ring P. O. Box 6825, Brentwood, Mo.

Filed March 13, 1969, Ser. No. 80,701
Int. Cl. B68g 7/00, 11/04
U.S. Cl. 29—91.1 5 Claims



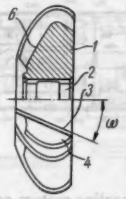
A method of preparing an article of furniture which comprises (1) shaping a layer of plastic foam to the desired contour on an essentially two dimensional plane; (2) bending and/or rolling said contoured layer of foam so as to yield an article of furniture of the desired shape on an essentially three dimensional plane and (3) maintaining said three dimensional shape by suitable positioning means; and to the articles of furniture formed by this method.

3,678,554

PROFILE FLAT TOOTH MILLING CUTTER

Leonid Antipovich Ezhov; Yankel Veniaminovich Kudevitsky, and Ljudmila Pavlovna Belyaeva, all of Leningrad, U.S.S.R., assignors to Leningradsky Metallichesky Zavod Imeni XXII Siezda KPSS, Leningrad, U.S.S.R.

Filed April 27, 1970, Ser. No. 32,033
Int. Cl. B26d 1/12
U.S. Cl. 29—103 3 Claims



The present invention relates to cutting tools, and more specifically to a flat tooth profile milling cutter one end of the cutting edge of which is located closer to the milling cutter rotation axis than the other points of this cutting edge.

The milling cutter can be most efficiently used, according to the invention, for machining curvilinear surfaces of vanes of steam and gas turbines, chip grooves of taps, and other cutting tools.

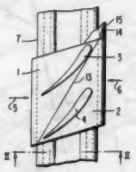
According to the invention each tooth of the milling cutter is inclined with respect to the milling cutter rotation axis at the same angle of 15–45°, as a result of which the rank angles of each tooth along its cutting edge, in planes normal to the cutting edge profile are positive.

3,678,555

METHOD FOR CONNECTING COOLED OR UNCOOLED ROTOR BLADES TO THE BLADE RIM OF AN ASSOCIATED DISC

Wolfgang Hansen, Krailling near Starnberg, Germany, assignor to Motoren-und Turbinen-Union Munchen GmbH, Munich, Germany

Filed Nov. 16, 1970, Ser. No. 89,561
Claims priority, application Germany, Nov. 15, 1969, P 19 57 614.8
Int. Cl. B23k 1/20; B23p 1/26
U.S. Cl. 29—156.8 R 10 Claims



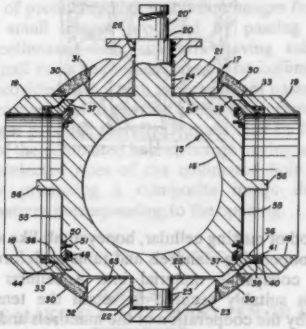
A method for connecting cooled or uncooled rotor blades to the disc rim of an associated disc, especially for gas turbine engines with a high shaft speed, in which each rotor blade is provided with a triangular segment — as related to the plane of the disc rim surface — forming the blade root. For assembly, two segments having collars on opposite sides bent so as to embrace the face edges of the disc rim are placed onto the rim from both sides in such a manner that the longest faces of the two segments will coincide and contact each other on the surface of the blade rim. The segments then will be welded together in this area, forming a pair of blades which encloses the surface of the disc rim as well as its edges.

3,678,556

METHOD OF MAKING WELDED BALL VALVE

Homer J. Shafer, P.O. Box 83, Mansfield, Ohio

Division of Ser. No. 680,633, Nov. 6, 1967. This application June 23, 1970, Ser. No. 49,144
Int. Cl. B21d 53/00; B21k 29/00; B23p 15/26
U.S. Cl. 29—157.1 R 4 Claims



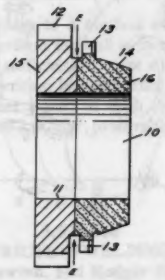
A ball valve structure comprising a valve element having an integral stem and a surface formed spherically around the stem axis, making housing parts welded in a longitudinal plane passing through said stem axis to form a tubular domed housing around the ball with the stem bearing located within and welded to the housing, flow tubes welded in the ends of said tubular housing in accurate alignment with the flow port in the ball and embodying valve seating rings in sealing contact with improved resilient ring seals on the ball, said sealing rings and retaining means therefor insertable through the flow tubes after welding.

3,678,557

METHOD FOR MAKING GEAR

Michael R. Howard, Essex, England, assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 22,965, March 26, 1970, Pat. No. 3,626,779. This application March 8, 1971, Ser. No. 121,915
Int. Cl. B21d 53/28; B23p 15/14; B21h 5/00; B29d 15/00; B21k 1/30
U.S. Cl. 29—159.2 5 Claims



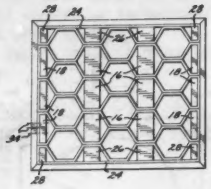
A method for making a gear formed from wrought or cast and powdered metal, particularly a transmission gear, having gear teeth designed to engage a driving or driven gear and having clutch teeth designed to couple the gear for rotation with a rotatable shaft. Gear manufacturing method includes forming a first gear part with gear teeth from wrought or cast metal, forming a second part from powdered metal and joining the two parts together.

3,678,558

METHOD OF FABRICATING CELLULAR STRUCTURES

Carl K. Fredericks, San Diego, Calif., assignor to Corlite Corporation, San Diego, Calif.

Filed June 24, 1970, Ser. No. 49,287
Int. Cl. B23p 15/12
U.S. Cl. 29—160 9 Claims



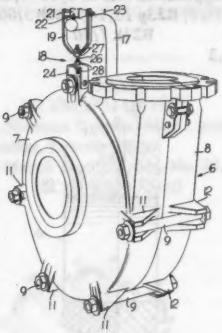
A method of making cellular, honeycomb-like structures by utilizing cooperating mandrels and rams to deform and shape relatively collapsible material into a cellular array. The material is suitably secured to retain the tensioned state produced by the cooperation of the mandrels and rams, and a plurality of the structural members thus formed is stacked, and a perimetrical frame is attached to the outermost walls of the cells of the outermost structural members. The frame maintains the tensioned state of the cellular array, so that the mandrels can be removed from the array. Various sizes and configurations of rams and mandrels may be used to provide cellular arrays of different or composite configurations.

3,678,559

LIFTING DEVICE FOR DISASSEMBLING AND REASSEMBLING PUMP PARTS

Juris Zilkalns, Lachine, Quebec, Canada, assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Oct. 2, 1970, Ser. No. 77,413
Int. Cl. B23p 19/00
U.S. Cl. 29—200 D 3 Claims



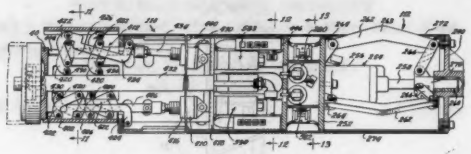
A split casing pump is provided with a bracket which pivotally supports a lifting bar. The casing half which is desired to be removed is attached to a hanger which rolls on the lift bar. After the casing half is released from the stationary portion of the pump, it is swung out of the way on the bar so that the wearing parts of the pump can be replaced. For reassembly, the removed casing half is rotated back to its original position; and because the hanger can be rolled on the lift bar, it can be eased into proper bolting position.

3,678,560

INTERNAL PIPE SEALING SYSTEM

Raymond J. Dufour, Wheaton, Ill., and James J. Grimm, Columbus, Ohio, assignors to Northern Illinois Gas Company, Aurora, Ill.

Filed May 6, 1970, Ser. No. 35,140
Int. Cl. F16l 55/16
U.S. Cl. 29—235 13 Claims



An internal pipe sealing system comprising a sealing device and seal installation equipment. The sealing device is constructed of an outer elastic sealing member and an inner expandable retainer member.

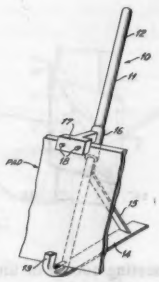
The seal installation equipment includes a seal installation tool designed to be pulled through the inside of a pipe and comprises a joint locator, a seal expander, and a seal magazine-loader. The seal magazine-loader carries a plurality of sealing devices and forwards them one at a time to the seal expander. The seal expander has a plurality of radially-expandable shoes and upon energization, these shoes move outwardly against the retainer member until the sealing member is pressed into sealing engagement with the pipe and retainer member moves to a locking position. The movement of the tool installation assembly through the pipe and the actuation of the seal magazine-loader and seal expander is controlled remotely at a control panel located above ground.

3,678,561

JIFFY VEHICLE BRAKE TESTER PAD REMOVAL TOOL

William J. Mautz, Sr., 9 N. Circus Ave., Clearwater, Fla.

Filed April 6, 1970, Ser. No. 26,017
Int. Cl. B23p 19/04; A47g 29/00; B66f 3/00
U.S. Cl. 29—267 1 Claim



A tool for lifting and removing a pad from rollers for cleaning or servicing purposes, the device comprising an elongated bar with a lower hook at the bottom thereof, the upper end of the bar forming a handle, a slideable sleeve, a longer bar supporting a top hook, and the lower portion of the bar being mounted upon a base having one end thereof secured by a brake to an intermediate portion of the bar.

3,678,562

METHOD AND DEVICE FOR EXCHANGING TOOLS ON MACHINES HAVING RECIPROCATING MOVEMENT

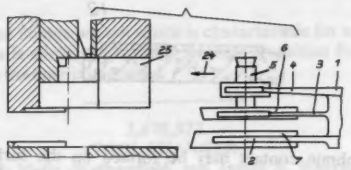
Berthold Leibinger, Gerlingen, Germany, assignor to Trumpf & Co., Stuttgart-Weilindorf, Germany

Filed Oct. 22, 1970, Ser. No. 82,992

Claims priority, application Germany, Nov. 3, 1969, P 19 55 193.0

Int. Cl. B23p *17/00, 19/04*

U.S. Cl. 29—400 16 Claims



In a method for exchanging tool sets to a machine having a reciprocating movement and including locking means for the parts of each tool set, the tool parts, in advance of insertion into the machine, are positioned and releasably retained in a tool holder. The tool holder, carrying the parts, is then inserted into the machine and the locking means are operated to lock the tool parts in the machine while the tool parts are still in the holder. The holder is then released from the tool parts and withdrawn from the machine. The holder includes adjustably superposed forked arms, each engageable with a respective tool part, with each arm of the fork having releasable detent means cooperable with the associated tool part. Either the arms of the fork or the releasable detent means may be resilient to provide for ready engagement of the holder with the tool parts and ready disengagement therefrom.

3,678,563

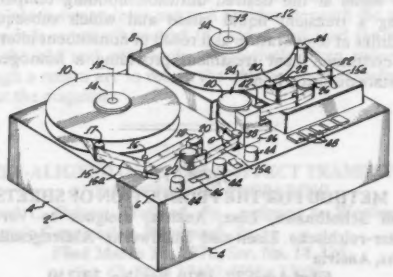
HELICAL SCANNING ASSEMBLY FOR VIDEO TAPE MACHINE

Alexander R. Maxey, Newark, Calif., assignor to Echo Science Corporation

Division of Ser. No. 738,250, June 19, 1968, Pat. No. 3,516,146. This application March 19, 1970, Ser. No. 24,975

Int. Cl. B23q *17/00*

U.S. Cl. 29—407 1 Claim



A scanning assembly for a helical-wrap, drum-type, video tape machine includes entry and exit tape guides and a drum assembly interconnected by a bracket. The drum assembly includes upper and lower cylindrical male guides which butt against an elongate reference way on the bracket to align the axis of the drum assembly. The entry and exit guides are each mounted on the bracket oblique to the drum assembly axis by a pin which extend from the guide into an oversize bore in the bracket and is held in place by adhesive.

3,678,564

METHOD OF PRODUCING HIGH RESOLUTION IMAGES AND STRUCTURE FOR USE THEREIN

John A. Roberts, North Chelmsford, and Alwyn H. King, Sherborn, both of Mass., assignors to Brunswick Corporation

Division of Ser. No. 701,760, Jan. 30, 1968, Pat. No. 3,556,636. This application Sept. 10, 1970, Ser. No. 70,952

Int. Cl. G03c *5/00*

U.S. Cl. 29—419 1 Claim

A method of producing high resolution images formed of a plurality of small images produced by passing radiation through a collimated hole structure having substantially rectilinear small cross section passages. The collimated hole structure is provided with a high aspect ratio of passage length to passage cross section to provide a high resolution in the individual images produce thereby. A mask may be formed on one surface of the collimated hole structure having an opening exposing preselected ones of the collimated hole structure passages for producing a composite image defining a preselected pattern corresponding to the opening.

3,678,565

METHOD OF MAKING A BALL POINT PEN OR A REFILL THEREFOR

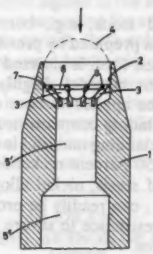
Georg Linz, Nuremberg, and Lothar Sommer, Katzwang, both of Germany, assignors to Firma Georg Linz, Nuremberg, Germany

Filed Feb. 5, 1971, Ser. No. 112,943

Claims priority, application Germany, July 10, 1970, P 20 34 274.9

Int. Cl. B23p *11/00*

U.S. Cl. 29—441 3 Claims



This invention relates to a method of manufacturing ball point pens. In the method the ball is force-fitted into the ball housing with a force sufficient to cause a narrowing of the feed ducts for supplying writing medium from the reservoir to the ball such that at least a part of each duct has a maximum cross-sectional area of 2,000 μ^2, preferably, 1,000 μ^2.

3,678,566

FRICTION WELDING

Colin R. G. Ellis, Newton, and Rodger H. Lilly, Comberton, both of England, assignors to The Welding Institute, Cambridge, England

Filed July 13, 1970, Ser. No. 54,342

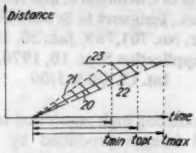
Claims priority, application Great Britain, July 16, 1969, 35,790/69

Int. Cl. B23k *27/00*

U.S. Cl. 29—470.3 15 Claims

In a friction welding process, the rate of axial shortening of the workpieces due to burn-off during their relative rotation under axial pressure is measured and used as a guide to the

quality of the weld. Deviation between the desired and actual burn-off ratesmay be used to adjust the axial pressure to



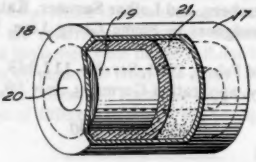
reduce this deviation. As an alternative, the speed of relative rotation may be adjusted instead of the axial pressure.

3,678,567

PRODUCTION OF CLAD METAL ARTICLES

Charles E. Manilla; Harold H. Honaker, both of Huntington, and David O. Gothard, Ona, all of W. Va., assignors to The International Nickel Company, Inc., New York, N.Y.

Division of Ser. No. 630,987, Apr. 14, 1967
Filed June 18, 1970, Ser. No. 57,896
Int. Cl. B22f *3/24*
U.S. Cl. 29—420.5 **22 Claims**



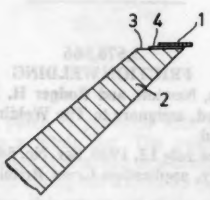
Production of clad stock, e.g., bar, tubing, pipe, etc., wherein the cladding is prepared by pressing metal powders to desired form, the green form is sintered and coextruded hot with the core or basis material. Highly corrosion resistant cladding metals can be applied to core or basis materials of iron-group metals including common structural materials and high recovery of the cladding material is obtained. Clad tubes having a cladding of 50 percent nickel-50 percent chromium alloy on substrates of steels, nickel alloys, including nickel-chromium alloys, etc., can readily be produced for use in applications requiring resistance to severe corrosive conditions at various temperatures.

3,678,568

METHOD OF SECURING DIAMOND BY BRAZING

Wilhelmus Franciscus Knippenberg, and Gerrit Verspui, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 29, 1970, Ser. No. 50,851
Claims priority, application Netherlands, July 2, 1969, 6910115
Int. Cl. B23k *31/02*
U.S. Cl. 29—473.1 **4 Claims**



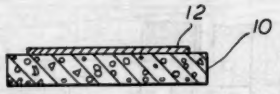
Method of securing diamond by means of brazing with a brazing filler consisting of an alloy of aluminum and silicon which contains from 8 to 18% by weight of silicon.

3,678,569

METHOD FOR FORMING OHMIC CONTACTS

William Otto Giesfeldt, Milwaukee, and Roy Lee Pinnow, Wauwatosa, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Division of Ser. No. 794,020, Jan. 27, 1969. This application July 15, 1970, Ser. No. 55,012
Int. Cl. B23k *31/02*
U.S. Cl. 29—473.1 **9 Claims**



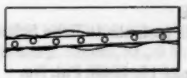
An ohmic contact may be formed on the surface of a semiconductive device such as a reduced barium titanate by applying to the surface of a semiconductor a layer of a composition containing a reducible composition of nickel and indium and then firing the device at a liquified temperature under reducing conditions.

3,678,570

DIFFUSION BONDING UTILIZING TRANSIENT LIQUID PHASE

Daniel F. Paulonis, Killingworth; David Scott Duvall, Middletown, and William A. Owczarski, Cheshire, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed April 1, 1971, Ser. No. 130,149
Int. Cl. B23k *31/02*, *35/24*
U.S. Cl. 29—498 **1 Claim**



Diffusion bonding is effected utilizing a thin alloy interlayer which melts at the desired diffusion bonding temperature forming a transient liquid phase and which subsequently resolidifies at temperature as a result of constituent interdiffusion, continued heat treatment providing a homogeneous solid-state diffusion bond.

3,678,571

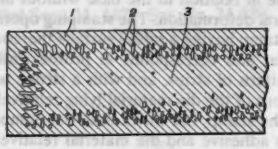
METHOD FOR THE PRODUCTION OF SHEETS

Rudolf Schoffmann, Linz, Austria, assignor to Vereinigte Oster-reichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed April 27, 1970, Ser. No. 32,230
Claims priority, application Austria, May 9, 1969, A 4445/69
Int. Cl. B23p *25/00*
U.S. Cl. 29—527.6 **4 Claims**

The disclosure proposes a method for the production of sheets from the slabs cut from a bar of unkilled steel cast by the continuous casting method, wherein the cast bar, after it has solidified completely and as soon as its cross section has an equalized temperature in the range of 900° to 1,200° C., preferably 1,000° to 1,100° C., is shaped in one step so as to reduce its cross section by about 10 to 20 percent, whereupon

it is shorn to length, and the slabs are then heated to rolling temperature and shaped in a plurality of passes. Owing to this



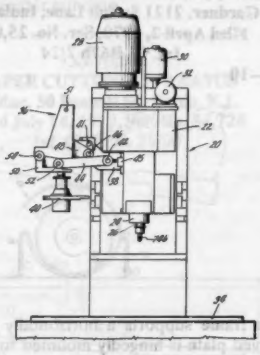
method the bubble wreath which is characteristic for unkilled steel slabs is eliminated so that the heat transition from the surface to the core is improved.

3,678,572

TOOL CHANGER

William R. Mello, Wethersfield, and James A. Warren, Simsbury, both of Conn., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed May 15, 1970, Ser. No. 37,531
Int. Cl. B23g 3/157
U.S. Cl. 29—568 11 Claims



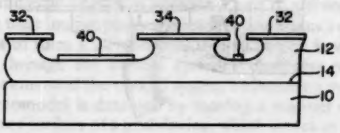
A tool changer for a machine tool interchanges a new and an old tool between a storage magazine and the machine tool spindle. The magazine selectively rotates to a transfer position for a particular tool. A transfer slide clamps and moves the new tool from the magazine to a receptacle of a transfer plate. The plate is swung in an arc to a position beneath the spindle where it is rotatively moved to unload and load the spindle with the old and new tools, respectively, then swing back through a return arc to return the old tool to its transfer position at the magazine.

3,678,573

SELF-ALIGNED GATE FIELD EFFECT TRANSISTOR AND METHOD OF PREPARING

Michael C. Driver, Trafford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 10, 1970, Ser. No. 18,226
Int. Cl. B01j 17/00; H01g 13/00
U.S. Cl. 29—571 3 Claims



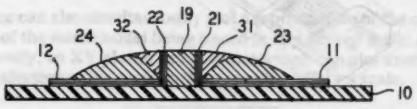
This disclosure relates to a high frequency field effect transistor with and accurately aligned gate contact disposed between source and drain contacts. The device consists of a substrate having a substantially flat upper surface, a layer of lightly doped semiconductor material having its bottom surface disposed on the surface of the substrate and a metal layer disposed on the upper surface of the layer of semiconductor material. An aperture is formed through the metal layer into the layer of semiconductor material. The gate contact is disposed within the aperture while the metal layer around the periphery of the aperture form the source and drain contacts.

3,678,574

ACOUSTICALLY ABSORBENT MOUNTING METHOD FOR OPTICAL MODULATOR

Martin Robert Biazzo, Holmdel; Bernard George King, Rumson, both of N.J., and William Charles Gormley Ortel, New York, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 780,347, Dec. 2, 1968, Pat. No. 3,614,201.
This application Nov. 9, 1970, Ser. No. 87,850
Int. Cl. H01s 4/00
U.S. Cl. 29—592 7 Claims



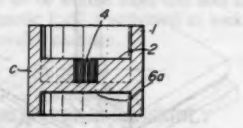
Acoustical ringing which results from piezoelectric effects in an electro-optical modulator is suppressed by mounting the modulator crystal between massive, acoustically absorbent, support members which also provide an electric circuit interface for applying electric signals to the modulator. Solder provides such an absorbent mounting for a lithium tantalate electro-optical modulator crystal. Both solder support members are applied during the same heating interval and permitted to cool simultaneously. In one embodiment the solder application is accomplished in a first step wherein mounds of solder are applied adjacent to the crystal at a first temperature and in a second step wherein additional solder is applied at a lower temperature between the crystal and the solder mounds.

3,678,575

MANUFACTURING METHOD OF A MAGNETRON ANODE

Masamoto Akeyama, Kokubunji, and Sohji Takahashi, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed March 10, 1970, Ser. No. 18,168
Int. Cl. H01p 11/00
U.S. Cl. 29—600 4 Claims

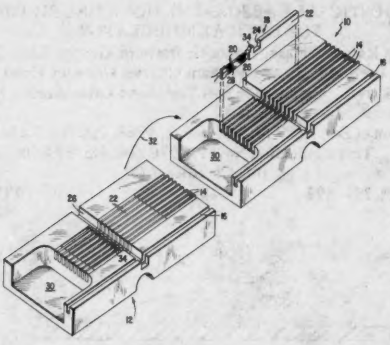


A method for manufacturing an anode structure used for a magnetron from metal stock, by which the peripheral wall and the inner vanes of the anode are integrally constructed, the said method comprising three steps, that is: the step of forming a primary workpiece consisting of a thick cylindrical wall and a thick disk-like part closing the cylinder in its axially mid portion, the step of forming a secondary workpiece from the primary workpiece by a warm extruding process so that the secondary workpiece has a plurality of radial vanes integral with the cylindrical wall and extending radially inward from the wall, and a step of removing the remaining portion of the disk-like part bridging the bottom ends of the vanes.

3,678,576
METHOD OF MANUFACTURING MULTIPLE TRACK, SINGLE GAP MAGNETIC HEADS

Richard E. Braun, St. James; Lionel G. Hopkins, Lake Grove; Neil J. Sheehan, Carle Place, and Edward J. Sanchez, Long Island, all of N.Y., assignors to Magnetic Head Corporation, Hauppauge, N.Y.

Filed June 25, 1971, Ser. No. 156,809
Int. Cl. G11b 5/42; H01f 7/06
U.S. Cl. 29—603 3 Claims

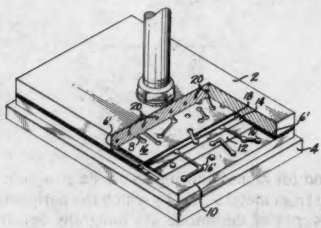


Two sub-assemblies, each comprising an identical, elongate compound housing and a plurality of similarly arranged elongate compound cores, are joined in face-to-face engagement with opposite end portions of the compound cores of one sub-assembly forming magnetic circuits, including an air gap, with opposite end portions of the compound cores of the other sub-assembly. Separation of the joined sub-assemblies substantially perpendicular to the plane of their face-to-face engagement at a position intermediate the opposed end portions of the combination cores results in the formation of two complete head assemblies.

3,678,577
METHOD OF CONTEMPORANEOUSLY SHEARING AND BONDING CONDUCTIVE FOIL TO A SUBSTRATE

Walter Weglin, and Charles W. Wildebour, both of Seattle, Wash., assignors to Jerobee Industries, Inc., Redmond, Wash.

Continuation-in-part of Ser. No. 225,482, Sept. 24, 1962, abandoned. This application Sept. 25, 1969, Ser. No. 861,206
Int. Cl. H41m 3/08
U.S. Cl. 29—625 3 Claims

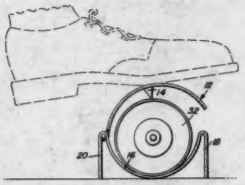


A method is disclosed for manufacturing a composite structure such as a printed circuit board comprised of a pattern of foil strips bonded to an underlying support. Initially, the method comprises the step of placing a continuous uninterrupted layer of die material face-to-face with a flat integral base in a press. A sheet of foil is arranged opposite the foregoing assembly in the press, with a layer of unactivated adhesive material interposed between the foil and the base, and the foil is stamped directly against the opposite face of either the layer of die material or the base, while the layer of die material is compressible in relation to the base without undergoing substantial lateral deformation. The stamping operation is carried out with a stamp having a raised surface thereon which is substantially flat and corresponds in profile width and outline with the pattern of strips, and with a stroke which displaces those portions of the die material lying relatively opposite the surface of the stamp, but which does not compress those portions of the adhesive and die material relatively surrounding the outline of the surface. As a result, shear forces are generated between the respective stamped and unstamped die portions without activating the unstamped adhesive portions. The shear forces separate the pattern of strips from the unstamped foil, and the strips are bonded to either the layer of die material or the base, depending on the level at which the stamp's stroke is bottomed in the assembly. Since the unstamped adhesive material is unactivated, the unstamped foil and adhesive material is easily relatively removed from the assembly to expose the pattern of strips.

3,678,578
AEROSOL CAN PUNCHER

Frank J. Patton, Jr., Route 6 Box 104, Frankfort, Ind., and Danny J. Gardner. 2121 Suffolt Lane, Indianapolis, Ind.

Filed April 2, 1970, Ser. No. 25,076
Int. Cl. B67b 7/24
U.S. Cl. 30—10 4 Claims

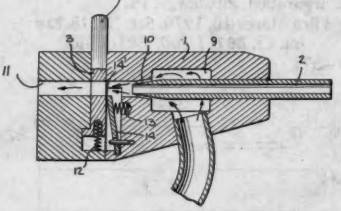


A cradle frame supports a horizontally disposed aerosol can. A curved plate is hingedly mounted to the cradle frame and attaches a punch thereon. After an aerosol can is placed on the cradle frame the plate is moved downwardly thereby driving the punch through the wall of the aerosol can which results in relatively slow venting of the gas in the can.

3,678,579
YARN CONTROL APPARATUS

Valter Slavik, Wattwil, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Switzerland

Filed March 2, 1971, Ser. No. 120,257
Claims priority, application Switzerland, March 6, 1970, 3304/70
Int. Cl. B26b 13/00; B65h 54/02
U.S. Cl. 30—131 5 Claims

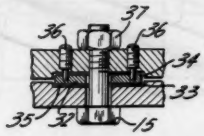


Device draws yarn end by suction into receiver and expels same by fluid pressure, or releases same by cutting action, for transfer to bobbin, or the like.

3,678,580
SCROLL SHEARS OR THE LIKE

William Duffy, Jamesburg, N.J., assignor to J. Wiss and Sons Co., Newark, N.J.

Filed Sept. 21, 1970, Ser. No. 74,087
Int. Cl. B26b 13/28
U.S. Cl. 30—267 10 Claims

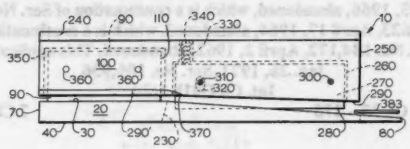


Scroll shears or snips with an offset cutting edge with relation to the flank of the shear, in order to obtain clearance to scroll slightly to the right, while retaining full maneuverability to the left. An adjustable ride or hardened washer interposed between the cutting blades of the shears to facilitate adjustment of clearance after grinding.

3,678,581
PAPER CUTTING APPARATUS

Berthelemi J. Bolduc, 30 Bennett St., Fords, N.J.

Filed July 14, 1970, Ser. No. 54,724
Int. Cl. B26b 29/00
U.S. Cl. 30—294 13 Claims



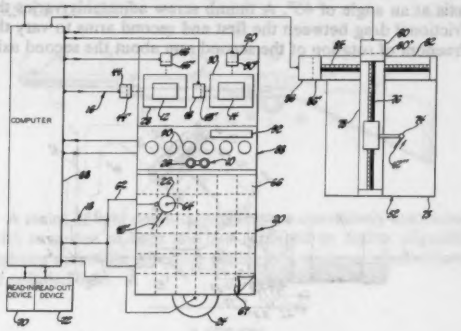
Cutting apparatus comprises upper and lower members, between which a cutting blade is located and between which a web to be cut is inserted. The lower member which supports the web is shaped to provide minimal wear and friction, and the upper member, rearwardly of the blade, is shaped to insure separation of the cut portions of the web so that the cutting operation is performed safely and easily without the web becoming jammed between the two members.

3,678,582
PHOTOGRAMMETRIC APPARATUS

Uuno V. Helava, Southfield, and Robert B. Forrest, Union Lake, both of Mich., assignors to The Bendix Corporation

Filed March 17, 1971, Ser. No. 125,238
Int. Cl. B43l 13/16
U.S. Cl. 33—20 D 15 Claims

Photogrammetric apparatus wherein a pair of stereophotographs have their images projected into the apparatus's optical system so as to form a stereomodel therein, which is visually observable through the optical system's binocular viewer. Relative movement of the optical system's measuring markers and the stereomodel is detected by moving a scanner device over the planar surface of a grid device, which serves as an encoder and develops command signals corresponding to the coordinates of a selected relative position of the scanner device and the grid device. A computer then from the command signals develop control signals for casing a servo system to move the stereophotographs so that the markers and the stereomodel assume a relative position corresponding to the coordinates selected by the scanner device. The scanner

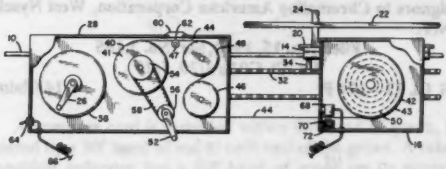


device can also simultaneously plot a reproduction of the contour of the stereomodel being traced in any desired scale. Additionally, an XY plotter or coordinatograph can plot another reproduction of the same contour in a still different scale.

3,678,583
WORK POSITIONER

Ralph W. Gundersen, St. Paul, Minn., assignor to Power Drive Corporation, St. Paul Park, Minn.

Filed Jan. 18, 1971, Ser. No. 107,064
Int. Cl. G01b 3/10
U.S. Cl. 33—125 10 Claims



A remote work positioning and measuring apparatus adapted to be mounted on a variety of stock handling machines. A slidable work engaging carriage is moved along the working surface by a hand crank. A tape measure extends between the slidable carriage and the frame of the machine, being wound onto spring-loaded reels at both ends. A hand crank allows the tape to be shifted from one reel to another unless an electromagnetic lock is activated to lock the tape with respect to the movable carriage.

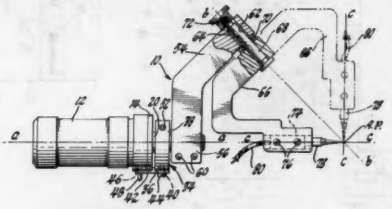
3,678,584
MEASURING PROBE ASSEMBLY

Richard F. Dolan, Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 13, 1970, Ser. No. 63,566
Int. Cl. G01b 5/00, 3/00
U.S. Cl. 33—169 R 3 Claims

A measuring probe assembly includes a hollow annular housing adapted to be mounted on a carrier of a coordinate measuring instrument. One end of a shaft is received within the housing and ball bearing assemblies mount the shaft for rotational movement with respect to the housing about a first axis. A drag member is keyed to the housing adjacent one end thereof and includes spaced leg portions that adjustably frictionally engage the other end of the shaft, which extends out-

wardly of the housing, and thus vary the freedom of rotation of the shaft about the first axis. A first arm has one end secured to the other end of the shaft for rotational movement therewith about the first axis. The other end of the first arm supports a second arm, adjacent one end thereof, for rotational movement about a second axis which intersects the first axis at an angle of 45°. A thumb screw adjustably varies the frictional drag between the first and second arms to vary the freedom of rotation of the second arm about the second axis.



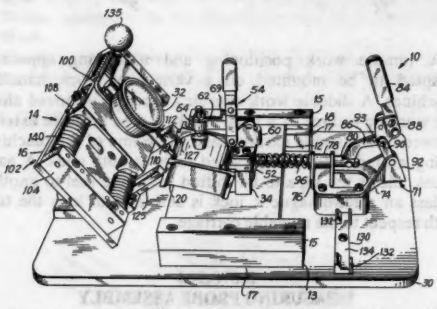
The other end of the second arm supports a null indicator which includes a probe slidably mounted with respect to the second arm along a third axis that intersects the first and second axes at the intersection thereof at an angle of 45° with respect to the second axis. With the probe in the null position, the tip of the probe is coincident with the intersection of the axes and rotation of the first and second arms to orient the probe in different positions constantly maintains the tip of the probe at the intersection thus constantly fixed with respect to the housing.

3,678,585

BOW GAUGE FOR TURBINE ENGINE VANES

Charles Dabrush, and Irving Strauss, both of Monsey, N.Y., assignors to Chromalloy American Corporation, West Nyack, N.Y.

Filed Jan. 15, 1970, Ser. No. 3,185
Int. Cl. G01b 3/20, 5/20
U.S. Cl. 33—174 P **14 Claims**



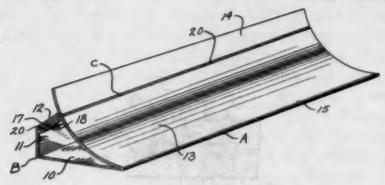
A measuring instrument for determining variations in the bow of a turbine engine vane adjacent to its trailing edge. A dial gauge is slidably mounted on the instrument and has an operating stem whose contact wheel perpendicularly engages the top surface of the trailing edge section of the vane. The contact wheel is adapted to move along a straight line which theoretically lies in the flat tangent plane of the vane airfoil at its trailing edge. The actual vane surface is bowed from this theoretical line and the dial gauge will accordingly indicate variations in the vane bow, above and below this tangent plane.

3,678,586

CARPET-TRIMMING TEMPLATES

Russell W. Weber, 8820 W. Spokane St., Milwaukee, Wis.

Filed May 14, 1971, Ser. No. 43,331
Int. Cl. B43l 7/00
U.S. Cl. 33—174 G **6 Claims**



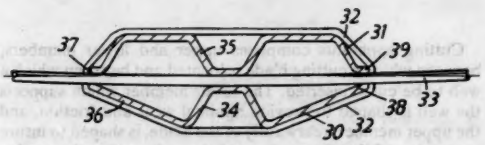
A template promoting the accurate cutting and laying of wall-to-wall carpeting or other floor covering which template is rested on the floor beneath the outer edge portion of the carpet with the template back abutting the wall and with the carpet resting on the upwardly angled front face of said template, said template front face having a longitudinal knife-receiving slot therein whereby a cutting tool can be used to sever the carpet portion thereabove, the distance between the template forward edge and said knife-receiving slot being the same as the distance from said template forward edge to the wall, whereby the carpet edge will fit snugly in abutting relation against said wall.

3,678,587

PROFILE TRANSFERRING DEVICE

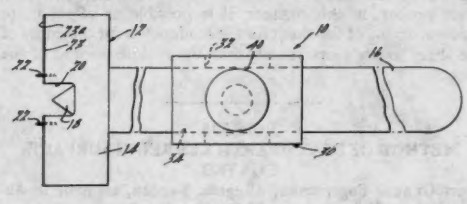
Ernest Francis Madden, Goring-By-Sea, England, assignor to William A. Drucker, New York, N.Y.

Continuation of Ser. No. 776,727, Nov. 18, 1968, Pat. No. 3,419,965, which is a continuation of Ser. No. 534,958, Feb. 25, 1966, abandoned, which is a continuation of Ser. No. 360,623, April 17, 1964, abandoned, which is a continuation of Ser. No. 184,172, April 2, 1962, abandoned. This application Jan. 26, 1971, Ser. No. 109,936
Int. Cl. G01b 5/20
U.S. Cl. 33—175 **7 Claims**



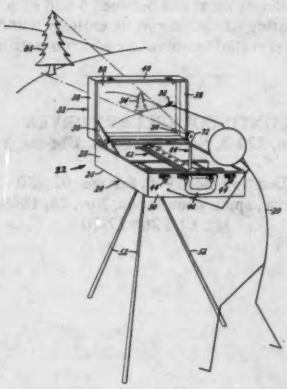
A profile transferring device comprises a body composed of two portions each of which includes a pair of connected projecting walls, the body portions being disposed in superposed relationship with the free edges of the respective walls of each portion being spaced and defining an opening along each longitudinal side of the body, the walls of one portion being inclined towards the other portion, a pair of end pieces being disposed one at each end of the body and engaged with the body portions to retain the body portions in superposed relationship, one of said body portions including between its walls a longitudinal ridge which is a fixed integral part of said body portion, the apex of the ridge being positioned in the direction towards the other body portion beyond the plane containing the free edges of the walls of said other body portion, a plurality of resilient linear rods being disposed through the body and projecting at each end through the openings, said rods being in side by side relationship and abutting on said ridge apex and on said free edges of said other body portion so as to be flexed and frictionally held in said body.

3,678,588
WALL OUTLET BOX LOCATER
Raymond O. Isola, P.O. Box 175, Glennie, Mich., and Norman R. Isola, 5142 Field Road, Clio, Mich.
Filed March 5, 1971, Ser. No. 121,436
Int. Cl. G01b 5/14
U.S. Cl. 33—180 R 7 Claims



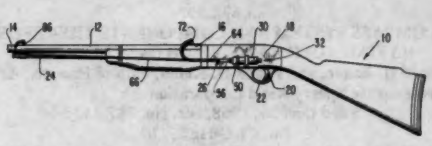
A wall outlet box locater apparatus for use where gypsum and other type wall board panels are used to cover walls in a structure comprising: a T-square shaped member, a lip member extending across the top head portion of the T-square member, and a sliding box shaped member positioned for movement of the leg of the T-square member and with said box shaped member capable of being fixed in various positions for the purpose of tracing a cut out area in the wall panel.

3,678,589
APPARATUS FOR DRAWING IN PERSPECTIVE
Robert J. Baier, 3960 W. Chester Pike, Newtown Square, Pa.
Filed Dec. 18, 1970, Ser. No. 99,345
Int. Cl. B43l 13/16
U.S. Cl. 33—277 7 Claims



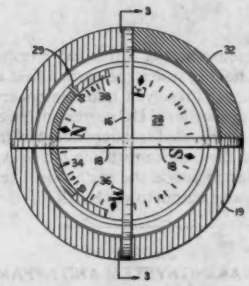
Apparatus to aid in the drawing of pictures in perspective. A portable case includes a box for carrying various items of sketching equipment and a top having a transparent window hinged to the box for pivotal movement between a closed position and an upright position. A sight is used to view a distant object through the window. A platform for the sight is removably mounted to the box and provides for positioning of the sight at selected distances from the window in order to obtained varying degrees of perspective. After a sheet of transparent material has been removably mounted on the window, one can draw thereon an image of a distant object in proper perspective with the aid of the sight.

3,678,590
MEANS FOR ILLUMINATION OF GUN SIGHTS AND THE LIKE
Norman G. Hayward, Rte. 3, Box 119 G, Manassas, Va.
Filed Aug. 18, 1970, Ser. No. 64,674
Int. Cl. F41g 1/00, 1/32, 11/00
U.S. Cl. 33—241 2 Claims



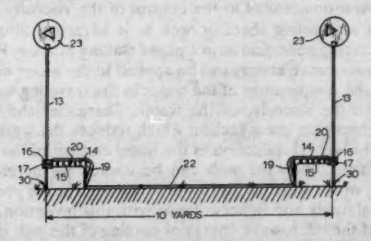
A series of light conductive fibers are operatively associated with a source of light and are arranged to define alignable sighting means for effective aiming of a weapon in conditions of reduced light.

3,678,591
SAILING CONDITIONS INDICATOR FOR SAILBOATS
Stanley A. Selig, Jr., 6607 E. 38th St., Indianapolis, Ind.
Filed Sept. 19, 1969, Ser. No. 859,295
Int. Cl. G01c 17/02
U.S. Cl. 33—263 9 Claims



A compass card is provided with a 90° band of green, bordered by a 30° band of red at each end of the green. A relative position indicator has a 90° band of green on its mounting ring, the remaining 270° being red. Intersecting arch bars are secured to the ring and border the margins of the green band, the ring being affixed to the sailboat around the compass, the arches disposed over the compass, and the compass lubber line and color bands being visible at all times, the lubber line being adjustable around the compass axis.

3,678,592
FOOTBALL SIDELINE CHAIN MARKER
Paul C. Williamson, 2018 Dartmouth Drive, Durham, N.C.
Filed Jan. 15, 1971, Ser. No. 106,693
Int. Cl. G01c 15/00; G01b 3/10
U.S. Cl. 33—289 4 Claims



A pole and chain apparatus for measuring first downs in

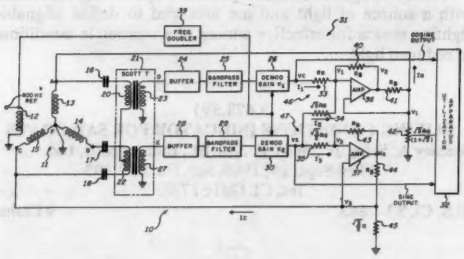
football incorporates a pair of poles each of which at its ground engaging end mounts an integral chain support structure adapted to stride the ball and to which a respective end of the chain is attached and which structure allows the measuring pole during close first down situations to be sued in alignment with the football axis.

3,678,593

COMPASS SYSTEM AND COMPONENTS THEREFOR HAVING AUTOMATIC FIELD CANCELLATION

Donald H. Baker, and Frank H. Kallio, both of Phoenix, Ariz., assignors to Sperry Rand Corporation

Filed Dec. 26, 1968, Ser. No. 787,143
Int. Cl. G01c 17/30
U.S. Cl. 33—355 3 Claims



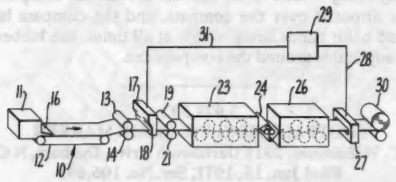
A compass system utilizing a flux valve responsive to the earth's magnetic field in which the earth's field vector sensed by pick-up windings is resolved into component values that are converted to proportional DC currents from an infinite impedance current source that is independent of the load of the pick-up windings, these currents being fed back into the flux valve in a direction to cancel the earth's field vector whereby to drive the flux valve output towards null.

3,678,594

PAPER MAKING SYSTEM AND APPARATUS

David J. Goerz, Jr., Menlo Park, and Erik W. Stephansen, Foster City, both of Calif., assignors to Bechtel International Corporation

Filed Dec. 16, 1970, Ser. No. 98,685
Int. Cl. B01k 5/00
U.S. Cl. 34—1 3 Claims



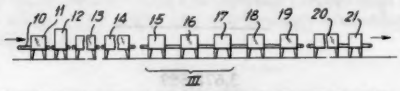
This invention relates to the control of the viscosity of the water in a traveling sheet or web as it advances through a manufacturing operation as in a paper making process. For example, microwave energy can be applied to the water wet web to raise the temperature of the water in the traveling web and so reduce the viscosity of the water. Thereafter the web is passed through a press section which reduces the water content of the web. If reduction in the water content of the web is not required, then the web can be cooled to increase the viscosity of the water so less water is removed in the press section. Preferably and in accordance with this invention, application of the microwave energy or cooling of the web is selectively effected in a plurality of zones, the total width of the zones covering the width of the traveling web. Moisture measuring means are provided downstream from the press section to determine the moisture content in each of the several zones across the width of the traveling web. This means emit signals which are applied to controllers relating to the output of each waveguide means and each cooling means in the several zones across the width of the sheet to change the output of each of the waveguide means or each of the cooling means to the sheet proper. In this manner, it is possible to effect more uniform drying of the sheet for the tendency is for the edges of the sheet to dry more readily than the middle portion of the sheet.

3,678,595

METHOD OF DRYING ARTICLES BEING SURFACE-COATED

Kurt Gunnar Fagerstrom, Alingsas, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Sept. 9, 1970, Ser. No. 70,726
Claims priority, application Sweden, Sept. 9, 1969, 12385/69
Int. Cl. F26b 7/00
U.S. Cl. 34—13.4 4 Claims



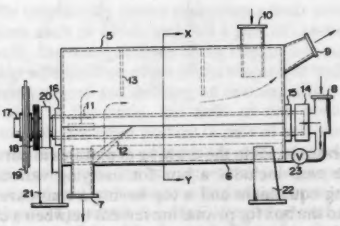
Wooden articles, to which a film of material like paint, lacquer and putty is applied, are repeatedly subjected to periods of surface heating at temperatures between 100° to 300°C. Between successive heating periods the articles are maintained in an atmosphere below 50°C. The surface heating periods are relatively short and between 5 and 15 seconds long to promote heating of the film in its entirety without heating the wood to an elevated temperature which is detrimental.

3,678,596

CONTINUOUS SLURRY DRYER

Kazunori Kubo, 722-3, Nabaube, Oaza, Ube-shi, Yamagrichiken, Japan

Filed Nov. 24, 1970, Ser. No. 92,450
Claims priority, application Japan, Nov. 28, 1969, 44/95186
Int. Cl. F26b 17/20
U.S. Cl. 34—68 4 Claims



This invention relates to an agitating type of dryer for continuously drying high-density slurries with high efficiency. This type of dryer is provided with a large number of paddles radially disposed on a pair of hollow shafts to transport and agitate high-density slurries to be dried in the machine. These

shafts rotate in predetermined opposite directions while the paddles are engaging with each other. Each shaft is disposed within a horizontal cylindrical vessel with a jacket. Hot gas passes through the hollow shafts and the jacket, respectively in the direction of slurry flow. Two co-currents of exhaust gas are then combined to pass through the vessel now in the reverse direction until the gas is exhausted from an exhaust port at the front end of the vessel. This type of dryer is capable of drying the high-density slurries which the prior art dryers found it difficult to dry effectively.

3,678,597

APPARATUS FOR TREATMENT OF GRANULATED FOODS

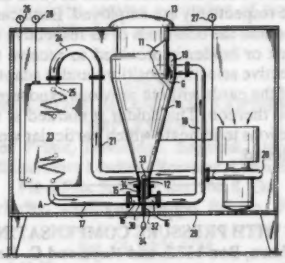
Hans Stuhlmann, Dusseldorf, and Werner Stuhlmann, Wuppertal-Elberfeld, both of Germany, assignors to Firma Battenfeld Maschinenfabriken GmbH, Meinerzhagen, Germany

Filed March 8, 1971, Ser. No. 121,988

Claims priority, application Germany, March 10, 1970, P 20 11 278.1

Int. Cl. F26b *19/00*

U.S. Cl. 34—48 **6 Claims**



An apparatus for treating granular material, such as plastic granulate or the like, developed as a circulation drier acting on the treatment material with high air temperature and brief time of heating in the manner of a heat shock, comprising a funnel-shaped storage container in which the material treated is contained having an upper filling opening and a lower outlet portion having a lower outlet opening, and a T-member having horizontal disposed branches and a vertical connection branch, the lower outlet portion of the container being operatively connected to the vertical connection branch for discharge of the material from the container, into the T-member. A pressure air blower is operatively connected to a line being connected downstream to one of the horizontal disposed branches of the T-member. An automatically controlled heating device is operatively interposed between the air blower and the one end of the horizontal disposed branch of the T-member, and a conveyor line is connected to the other horizontal disposed branch of the T-member and operatively to the lower outlet portion of the storage container. The conveyor line is connected downstream to an annular channel of approximately U-shaped cross section with the opening of the U towards the bottom, and constituting an air separator, the annular channel extending concentrically around the upper filling opening in the inside of the storage funnel. An outlet valve is disposed in the center of the lower outlet opening in the storage container and controllable from the outside and extends in a vertical direction downwardly and outwardly through the horizontal branch portion of the T-member, and, an air guide web is substantially disposed in a plane in the front portion of the T-member, and a common heat storage insulated housing is provided.

3,678,598

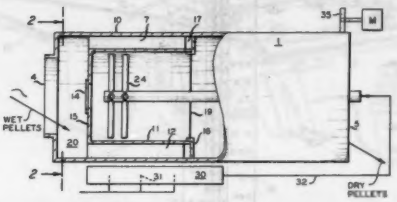
DUAL-DRUM DRYER

Francisco K. Quiles, Salamanca, Guanajuato, Mexico, assignor to Phillips Petroleum Company

Filed June 19, 1970, Ser. No. 47,253

Int. Cl. F26b *11/02*

U.S. Cl. 34—128 **5 Claims**



A dual-drum rotating dryer having an annular passageway between the drums through which the material being dried is caused to pass as it progresses through the dryer, the dryer being comprised of an outer drum and an inner drum positioned therein.

3,678,599

APPARATUS FOR A NON-CONTACTING STABILIZATION OF A WEB WHICH IS MOVED IN ITS LONGITUDINAL DIRECTION

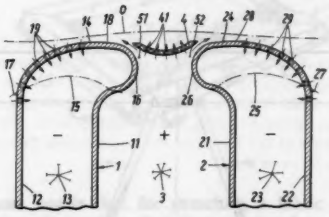
Hilmar Vits, Langenfeld, Germany, assignor to Vits Maschinenbau GmbH

Filed Sept. 28, 1970, Ser. No. 75,949

Claims priority, application Germany, Oct. 9, 1969, P 19 51 002.2

Int. Cl. F26b *13/00*

U.S. Cl. 34—156 **6 Claims**



In a process for a non-contacting directional control of a web, which is stabilized in a floating state and moves through a treating space, a treating fluid is supplied to said web and the treating fluid is flowed against the rear surface of a guiding surface element which is airfoil-shaped in cross section. Said rear surface is convex toward the web. The treating fluid is sucked from the space between said guiding surface element and said web. This process is adapted to separate a boundary layer from that surface of the web which faces the guiding surface element, and to suck off also said boundary layer.

3,678,600

PRECIPITATING SAND AND GRAVEL ANTI-POLLUTION DRYER FOR ASPHALT PLANTS

Kenneth S. Darby, R.D. #1, Falls, Pa.

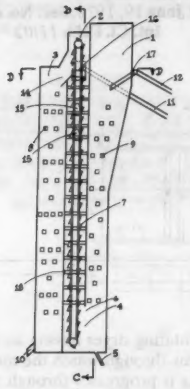
Filed Jan. 20, 1971, Ser. No. 108,057

Int. Cl. F26b *17/12*

U.S. Cl. 34—167 **1 Claim**

A drying apparatus having a chamber for condensing hot

gases and steam on incoming sand and gravel aggregate. The resultant warm wet aggregate washes dust from the exhausting



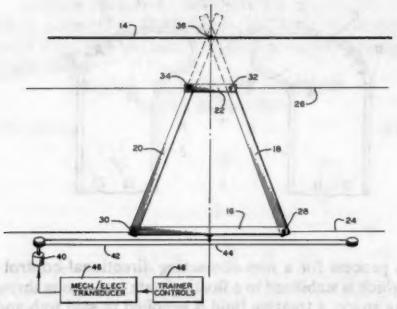
air of the dryer. A great reduction in fuel consumption and air pollution by reclaiming heat energy from the steam given off when drying aggregates.

3,678,601

VISUAL TEACHING AIR FOR FIXED-BASE VEHICLE TRAINER

Robert A. McKnight, Binghamton, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,374
Int. Cl. B64g 7/00; G09b 9/08
U.S. Cl. 35—12 N **5 Claims**



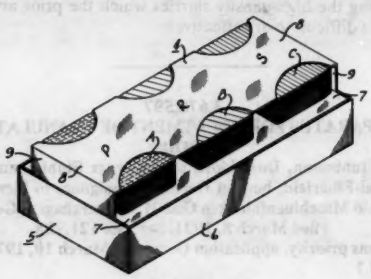
A simplified, mechanical system for arrangement forwardly of the trainee station in a fixed-base vehicle trainer, such as a light aircraft trainer, to enhance training value by providing a visual stimulus related to real-world conditions. Mechanical members are arranged to define a vertically disposed outline which conforms to the apparent shape of an assumed, fixed, horizontally disposed object, such as a runway, when viewed in perspective. Means are provided for moving the mechanical members in accordance with simulated movement of the trainer, thereby giving a visual impression of changes in the trainee's assumed positional viewpoint with respect to the fixed object, as represented by the shape of the outline defined by said mechanical members.

3,678,602

VOCABULARY BUILDING GAME CARDS AND HOLDER

Anthony A. Alam, 148 Richard Drive, Aliquippa, Pa.

Continuation-in-part of Ser. No. 754,030, Aug. 20, 1968, abandoned. This application Jan. 28, 1970, Ser. No. 6,432
Int. Cl. A63f 1/10
U.S. Cl. 35—35 J **4 Claims**



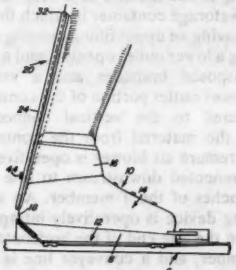
The present invention comprises a vocabulary building card game wherein two or more sets or decks of cards bear word parts which have word definitions such as roots and affixed of the same type respectively are employed. Each card also bears on the reverse side the definition of its respective root or affix. A dealing rack or holder is provided to receive the decks of cards in respective selection positions and is adapted to permit withdrawal of the cards without previous exposure of the word part displayed thereon. The holder is marked at the different selection positions to indicate which particular word part deck is there positioned.

3,678,603

SKI BOOT WITH PRESSURE COMPENSATING BRACE

Jack B. Kaufman, Box 1122, and Raymond G. Heid, Box 714, both of Ruidoso, N. Mex.

Filed Feb. 9, 1971, Ser. No. 113,870
Int. Cl. A43b 00/00
U.S. Cl. 36—2.5 AL **6 Claims**



A ski boot whose heel embracing counter is provided with upstanding extension means which equalizes stress and strain and increases backward pressure such as is necessarily applied while initiating and completing an intended turn and which is controllably helpful when skiing in deep-powdery snow. It comprises a contoured leg contacting brace which functions to stabilize the over-all boot so that pressure imposed stress is distributively transferred from the leg to boot and to the usual binding and ski. It is so designed and uniquely attached that it does not impose discomforting pressure on the boot-enclosed ankle or foot. The lower end portion is firmly bracketed on the counter of the boot and the upper portion braced against leg.

3,678,604

SHOE AND FASTENING THEREFOR

Beth Levine, New York, N.Y., assignor to Herbert Levine, Inc., New York, N.Y.

Filed June 25, 1971, Ser. No. 156,905
Int. Cl. A43b 3/12
U.S. Cl. 36—11.5 8 Claims

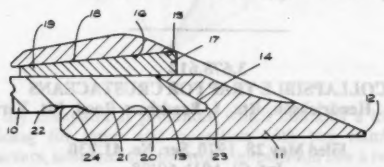
A shoe including means for engaging the forward portion of the foot and including a single, elongated strap extending out from the inside of the shoe at the sole, for being wrapped around the leg of the wearer a number of times, the strap being elastic to stretch as the wearer's leg moves.

3,678,605

TOOTH MOUNTING MEANS FOR EARTH WORKING IMPLEMENTS

Derek Arthur Prime, Doveridge, England, assignor to J. C. Bamford Excavators Limited, Rocester, Uttoxeter, England

Filed Feb. 3, 1970, Ser. No. 8,236
Claims priority, application Great Britain, Feb. 3, 1970, 7,743/69
Int. Cl. E02f 9/28
U.S. Cl. 37—141 T 12 Claims



An excavator bucket or similar earth working implement having an earth engaging blade, a tooth removably mounted on the blade and there being releasable clamping means such as a wedge or engageable pin engaged between the tooth and the blade at a position spaced inwardly from the edge to secure the tooth to the blade or other implement.

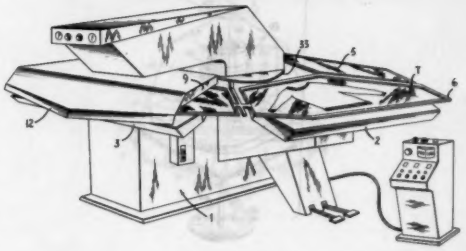
3,678,606

APPARATUS FOR PRESSING AND HEATING TEXTILE ARTICLES

Henry Renaut, 40, rue Boucher de Perthes, 59 Roubaix, France

Continuation-in-part of Ser. No. 810,528, March 26, 1969, abandoned. This application Nov. 10, 1970, Ser. No. 88,464
Claims priority, application France, April 2, 1968, 6819068
Int. Cl. D06f 71/08; D06c 15/00
U.S. Cl. 38—22 16 Claims

An apparatus for pressing and heating textile articles comprises a plurality of support members indexable about a central axis. The support members are positioned successively at each of a plurality of work stations. Means are provided for



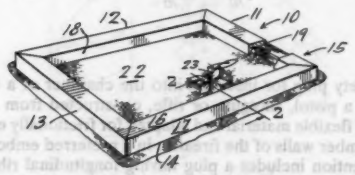
lifting the support members from stationary supports provided at each work station prior to the indexing of the support members.

3,678,607

FRAME FOR STRETCHING AND MOUNTING A NEEDLECRAFT PROJECT

Joseph M. Tabor, Toledo, and Ted C. Betker, Bowling Green, both of Ohio, assignors to General Mills Fun Group, Inc., Toledo, Ohio

Filed March 22, 1971, Ser. No. 126,599
Int. Cl. D06c 3/08
U.S. Cl. 38—102.91 5 Claims



A frame usable first for stretching a fabric during the preparation of a needlecraft project and then for mounting the finished project. The frame has a main border member which defines an opening across which the fabric is stretched. The border member has two grooves in its back side which extend around the opening. A retainer strip of proper cross section is adapted to be forced into either of the grooves with a web of the fabric; first into the outer groove during preparation and then into the inner groove for mounting and display of the finished project.

3,678,608

LABEL ATTACHMENT MEANS

Arthur J. Minasy, Woodbury, N.Y., assignor to Knogo Corporation, Westbury, N.Y.

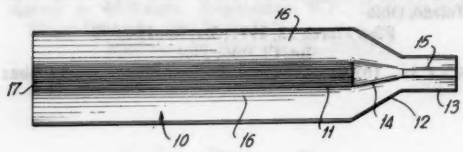
Continuation-in-part of Ser. No. 6,004, Feb. 7, 1970, which is a division of Ser. No. 599,922, Dec. 7, 1966. This application Oct. 23, 1970, Ser. No. 83,477
Int. Cl. G09f 3/08
U.S. Cl. 40—20 R 9 Claims

A label attachment arrangement comprising a tack-like ele-

ment whose shank passes through a label and an article of merchandising, the shank being encased by and interlocked in

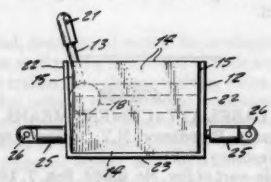
a button, and means for preventing the removal of the button by unauthorized persons.

3,678,609
SAFETY PLUG FOR FIREARMS
Joseph Fazio, 7204 Grand Ave., Maspeth, N.Y.
Filed June 25, 1970, Ser. No. 49,668
Int. Cl. F41c 27/00
U.S. Cl. 42—1 N **6 Claims**



A safety plug for insertion into the chamber of a firearm, such as a pistol, shotgun, or rifle, constructed from a single piece of flexible material and adapted for frictionally engaging the chamber walls of the firearm. In a preferred embodiment, the invention includes a plug having longitudinal ribs which engage the walls of the chamber while permitting the chamber and barrel to be ventilated.

3,678,610
MARINER'S LOOM
Philip J. Klemkowski, Jr., 1146 Hull St., Baltimore, Md.
Filed July 20, 1970, Ser. No. 56,332
Int. Cl. A01k 91/00
U.S. Cl. 43—43.12 **3 Claims**

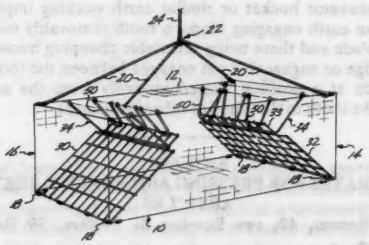


A device for giving a spots fisherman an improved control over his fishing line, the device controlling the dead fall effect when a bait is pulled from a stationary pin on an outrigger pole. The device comprises a main body having a longitudinally extending Z-shaped compartment or groove along one side thereof, the groove having one end of a slideable pin retained therein. The main body is fitted with a U-shaped clip having flexible, resilient tongues to close the opposite ends of the Z-shaped groove. Upon excessive breach pressure against the tongue at either end of the clip, the pin, which has an opening through which the fishing line passes, will breach outwardly of the device.

3,678,611
FISHING TACKLE CARRIER
Charles R. Files, 998 Martin St., Glen Ellen, Calif.
Filed Aug. 6, 1970, Ser. No. 61,632
Int. Cl. A01k 97/08
U.S. Cl. 43—26 **2 Claims**

A fishing tackle carrier which has a floating container with removable caps at the ends and a compartment with a hinged cover containing superimposed trays for lures and other fishing tackle. The carrier remains buoyant even through the central compartment is open for access to the trays.

3,678,612
COLLAPSIBLE TRAP FOR CRUSTACEANS
Roger L. Hendrickson, Rte. 1, Bradshaw Road, Mt. Vernon, Wash.
Filed May 28, 1970, Ser. No. 41,230
Int. Cl. A01k 69/08
U.S. Cl. 43—66 **4 Claims**

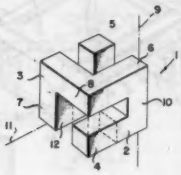


An assembly of panels, edge-hinged together, provides a collapsible cage having opposed mouth openings. Inside each mouth, a ramp panel defines an entry passage terminating at a restricted gullet which, preferably, is gated.

3,678,613
BLOCK SET

Winfried Geymeier, 37, Chemin de Pallin, Pully 1009 Lausanne, Switzerland

Filed May 27, 1970, Ser. No. 40,926
Int. Cl. A63h *33/08*
U.S. Cl. 46—25 5 Claims

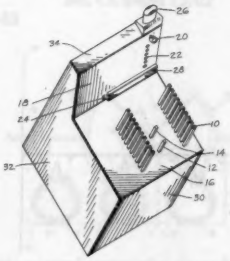


A block set having a plurality of individual units, each unit consisting of two identically proportioned U-shaped elements joined together at one leg of each element so that the exterior dimensions of the unit are in the form of a cube.

3,678,614
TOY COMPUTER CAPABLE OF LIMITED COMPUTATION AND SIMULATING LARGE COMPUTER

Norman Eugene Nagel, 6412 Weber Circle, Huntington Beach, Calif.

Filed Dec. 7, 1970, Ser. No. 95,776
Int. Cl. A63h *33/30*
U.S. Cl. 46—39 3 Claims



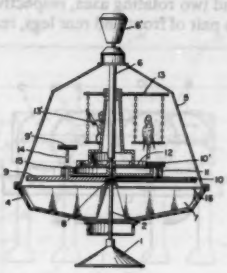
A toy computer is presented which contains a keyboard providing for input and operation with two numbers or characters, simulates the internal computation like a real computer by a series of flashing lights, and produces the answer at one location on a panel. The two characters are input by depressing two keys, but the answer is not produced until a compute knob is turned, and a short cycle of flashing lights has occurred.

3,678,615
TOY TOPS

Peter Balleis, Hermann-Lons-Str. 55, D-8502 Zirndorf near Nuernberg, Germany

Filed Dec. 5, 1969, Ser. No. 882,556
Claims priority, application Germany, Dec. 18, 1968, G 68 11 982.4-74.2
Int. Cl. A63h *1/06*
U.S. Cl. 46--68 3 Claims

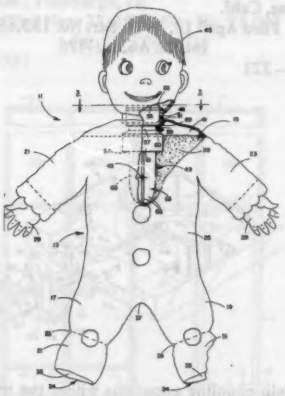
A toy top comprising a top body which is induced to rotate about an upstanding shaft by means of a spin imparting rod. A figure carrier rotatably mounted within the top body. A transmission gear for imparting rotation to the figure carrier when the top body is rotated. The transmission gear consisting of a pinion secured to the top body and rotatable about the shaft, pairs of first and second gearwheels rotatably mounted at diametrically opposite ends of the bearing carrier, the first gearwheels meshing with the pinion and the second gearwheels meshing with teeth on the figure carrier.



3,678,616
DOLL

Adolph E. Goldfarb, Tarzana; Judith D. Strader, and George C. Strader, both of San Dimas, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 18, 1971, Ser. No. 107,016
Int. Cl. A63h *3/00*
U.S. Cl. 46—151 7 Claims



A doll comprised of a body formed of a flexible material such as cloth and filled with a solid particulate filler. The body has an opening at the top thereof between the arms with a separate head inserted therein, the head having a solid extension emanating downwardly therefrom into the caVity of the body within the filler material. The dimensions of the doll are such so that it has a low center of gravity, enabling the doll to be readily self-standing on its own feet.

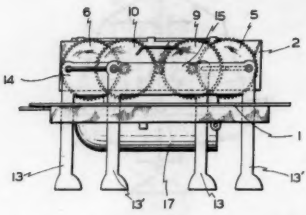
3,678,617
DEVICE OF WALKING LEGS FOR A TOY ANIMAL

Yoshiro Nomura, 17-5, 2-chome, Kuramae, Taito-ku, Toyko, Japan

Filed Sept. 11, 1969, Ser. No. 856,974
Claims priority, application Japan, Nov. 4, 1968, 43 96190
Int. Cl. A63h *11/10*
U.S. Cl. 46—149 1 Claim

This invention relates to a device or walking legs for a toy animal which walks by eight legs but appears to walk in a regular manner by four legs. This invention comprises a mechanical frame installed in the space consisting of a body supporting

frame and a covering frame modeled after an animal, a pair of front and rear rotating axes piercing traversely through said mechanical frame and having a pair of cranks attached to each of both ends of said two rotating axes, respectively, four moving plates having a pair of front and rear legs, respectively, and

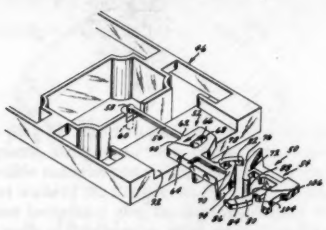


each said moving plate pivoted on said front and rear cranks and a prime mover transmitting rotation to said rotating axes by means of intermediate transmission gears. When said prime mover is made to start, said rotating axes rotate and then four moving plates move before and behind and up and down so that the toy animal walks by steps as in regular manner.

3,678,618
TOY COUPLING APPARATUS AND METHOD FOR UNCOUPLING SAME

Janos Beny; LC James Kingsbury, and David L. Scribner, all of Manhattan Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed April 13, 1971, Ser. No. 133,653
Int. Cl. A63h *17/26*
U.S. Cl. 46—221 **9 Claims**



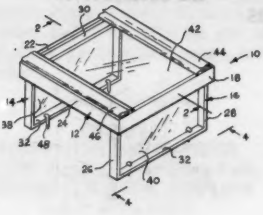
A toy train coupling apparatus where the train is movable over a flat surface rather than conventional rails. The coupling apparatus includes two coupling elements, each having a hook part, a depending pin, a flexible detent and a flexible elongated arm. The arm allows the hook part to pivot in response to engagement forces while limits are placed on the coupling element to restrain motion during disengagement. The arms and detents flex to provide biasing forces helping to cause engagement, while the detents also help to cause disengagement. External forces are applied longitudinally to cause engagement; external forces are applied to cause disengagement.

3,678,619
PLANT COVER

William C. Carlson, Box 7, R.R. 1, Burnum, Minn.

Filed Aug. 31, 1970, Ser. No. 68,402
Int. Cl. A01g *13/04*
U.S. Cl. 47—29 **4 Claims**

The plant cover has a rectangular top frame and first and second rectangular side frames pivotally interconnected so that they can be substantially orthogonally positioned. In such position, the side frames act as sides and legs which hold the top frame above the ground. When not in use, the side frames fold into the top frame. The top frame and side frames are covered with a material substantially transparent to actinic

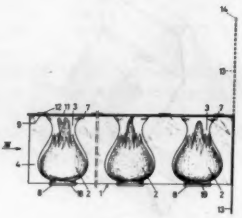


rays, so that the structure can be erected and placed over a plant to protect the plant from frost or otherwise enclose the region around the plant.

3,678,620
PACKAGE

Albert John Voges, Leidsestraat 83, Hillegon, Netherlands

Filed June 23, 1970, Ser. No. 49,043
Claims priority, application Netherlands, April 3, 1970, 7004806
Int. Cl. A01g *9/02*
U.S. Cl. 47—37 **5 Claims**



A package of plastics material adapted to hold a number of bulbs or tubers arranged at a certain interspace and suitable to be placed integrally the soil for planting said bulbs or tubers. The package comprises a top opening and a bottom opening for the growing stalk and roots, respectively.

3,678,621
HORTICULTURAL METHOD FOR GIVING SEEDS, PLANTS AND HARVESTED ITEMS HYGROSCOPIC CHARACTER DURING ARID CONDITION

Robert M. Reams, Rte. 2, Apex, N.C.

Continuation-in-part of Ser. No. 794,799, Jan. 28, 1969. This application July 1, 1970, Ser. No. 51,657
Int. Cl. A01h *5/04*; A01n *3/02, 5/00*
U.S. Cl. 47—58 **34 Claims**

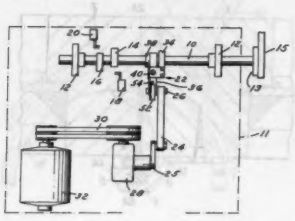
A hygroscopic character, i.e. the ability to take up and retain water, is given seeds, bulbs and plants during arid growing conditions and to cut leafy vegetables, cut trees, cut flowers and the like after being cut by the method of applying a material in powder or solution form selected from the group comprising magnesium carbonate, sodium citrate, magnesium chloride, magnesium pyrophosphate and citric acid, with magnesium carbonate being preferred.

3,678,622

SAFETY REVERSE FOR AUTOMATIC PARKING GATES

Harold L. Miller, 946 Lakepointe, Grosse Pointe Park, Mich.

Filed Aug. 11, 1970, Ser. No. 62,816
Int. Cl. E05f 15/04
U.S. Cl. 49—28 7 Claims



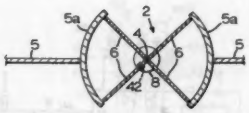
An improved automatic drive mechanism for automobile parking lot gates incorporating a reversing mechanism to immediately raise the gate if the gate strikes an object as it is lowering. An electrical interlock prevents the gate from raising when it has reached its final horizontal position.

3,678,623

CONTROL SYSTEM FOR REVOLVING DOOR

Keith T. Jenkins, Weston, Ontario, Canada, assignor to C. J. Rush Limited, Scarborough, Ontario, Canada

Filed June 26, 1970, Ser. No. 50,281
Int. Cl. E05d 15/02
U.S. Cl. 49—43 10 Claims



An electronic control system for a revolving door, in which four cams, one for each door leaf, rotate with the door and open a single fixed position switch each time the door is in a quarter-close position. When the door is pushed from the quarter-close position, the switch closes, energizing a circuit which controls a motor to rotate the door for a timed interval. During the timed interval the circuit renders ineffective the periodic opening and closing of the position switch as the door rotates. After the timed interval, the first time the door passes a quarter-close position, the actuation of the position switch causes the circuit to switch the motor to drive the door at low speed and the next switch actuation, 90 degrees later, stops the door in a quarter-close position.

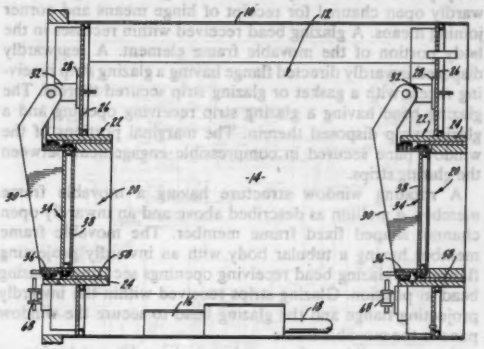
3,678,624

DOOR WITH DOUBLE-INFLATABLE SEAL AND PRESSURE CHAMBER

Vincent A. Bicicchi, Lombard, Ill., assignor to W. J. Woolley Co., River Forest, Ill.

Filed Oct. 12, 1970, Ser. No. 79,745
Int. Cl. E06b 7/00
U.S. Cl. 49—68 1 Claim

A door seal structure for use with a door frame having a door movably attached thereto. The seal structure includes a pair of spaced inflatable seals mounted on the periphery of the door and positioned for sealing contact with the door frame when expanded under the influence of a suitable pressure fluid. There is a space between the inflatable seals and means for pressurizing the space to provide a pressure barrier between the seals.

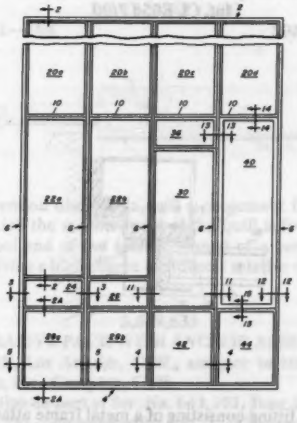


3,678,625

BUILDING WALL ASSEMBLY

Lawrence T. Vance, Pittsburgh, Pa., assignor to Engineered Products, Inc., Pittsburgh, Pa.

Filed Nov. 23, 1970, Ser. No. 92,001
Int. Cl. E06b 3/38
U.S. Cl. 49—381 8 Claims



A building wall assembly including hollow mullions which are adapted to receive recessed framing elements to provide maximum exposure of panel surfaces including decorative panels and both fixed and movable window panels or panes. The mullions are so configurated as to be assembled from two mullion elements which permit relative longitudinal sliding movement between the mullion parts responsive to thermally induced expansion and contraction. Each mullion forming element has a generally Z-shaped web portion and flanges extending in the same direction from opposed ends thereof. Framing elements, which are to a major extent recessed within the exterior of the mullion walls, are secured thereto by fastening means. A fastener clips or glazing bead is received within the framing elements. Compressible gasket means are secured within the framing elements and the fastener clip in order to compressibly engage opposed marginal portions of a fixed panel to sealingly secure the same in position.

A ventilating window structure incorporating a form of the mullion and frame elements described above. The window having a movable frame member provided with a web-like body portion, outwardly directed flanges defining an outwardly open channel for receipt of hinge means and corner joining means. A glazing bead received within recesses in the body portion of the movable frame element. A rearwardly disposed inwardly directed flange having a glazing strip receiving recess with a gasket or glazing strip secured therein. The glazing bead having a glazing strip receiving opening and a glazing strip disposed therein. The marginal portions of the window pane secured in compressible engagement between the glazing strips.

A rotating window structure having a movable frame member, a mullion as described above and an inwardly open channel shaped fixed frame member. The movable frame member having a tubular body with an inwardly projecting flange and glazing bead receiving openings securing a glazing bead in position. Glazing strips received within the inwardly projecting flange and the glazing bead to secure the window pane to the movable frame.

A compressible gasket or glazing strip element having an anchoring section, a compressible body portion and outer legs. The anchoring section having a resilient pilot section for assisting in introducing the gasket element into a recess. The body section is tubular and a rod-like connecting sector is interposed between the anchoring section and the tubular body section. Angularly rearwardly disposed resilient outer legs are connected with said tubular body section and project farther rearwardly than said tubular body section.

3,678,626

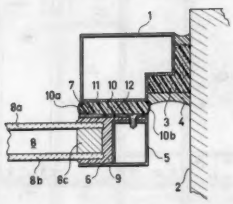
WINDOW FITTING

Rolf Rainer Heikel, Bembalentie 3, Kauniainen, Finland

Filed April 3, 1970, Ser. No. 25,501

Int. Cl. E05d 7/00

U.S. Cl. 49—402 **4 Claims**



A window fitting consisting of a metal frame attached to the wall and a metal sash with at least two glass panes attached to the frame, the sash being fitted inside the frame so that the opening of the sash is mainly congruent with the opening of the frame and with a heat insulating gasket fitted between the frame and the sash around the entire opening.

3,678,627

SEALS FOR DOUBLE DOORS AND THE LIKE

Bernard Dixon, Harpenden, England, assignor to Bernard Dixon and Partners Limited, London, England

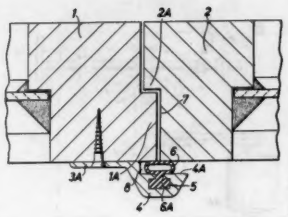
Filed June 19, 1970, Ser. No. 47,679

Claims priority, application Great Britain, June 24, 1969, 31,876/69

Int. Cl. E06b 7/16

U.S. Cl. 49—485 **4 Claims**

The disclosed invention concerns seals for double doors or windows, i.e. those which have stiles which meet edge-to-edge in the closed situation, in which a strip-like fitting on one door overlaps the other when closed and thus elastically deforms



and presses a sealing strip against the coplanar surfaces of the adjacent stiles; the seal strip is formed so that it can roll laterally to accommodate uneven surfaces.

3,678,628

APPARATUS FOR CUTTING AND GRINDING GLASS

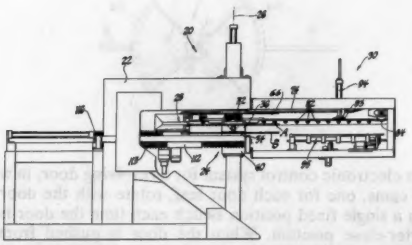
Harold A. McMaster, Woodville, Ohio, assignor to Guardian Industries Corporation, Detroit, Mich.

Division of Ser. No. 702,978, Feb. 5, 1968, Pat. No. 3,574,976.

This application Feb. 17, 1971, Ser. No. 116,018

Int. Cl. B24b 7/00, 9/00

U.S. Cl. 51—5 **43 Claims**



An apparatus for sizing a sheet of material comprising positioning means for disposing a sheet in a predetermined position relative to an axis, cutting means for cutting a predetermined peripheral pattern in the sheet relative to said axis, and grinding means for grinding the edge of the sheet while the sheet is in said predetermined position relative to said axis.

3,678,629

CENTRIFUGAL BLASTING WHEEL AND BLADE THEREFOR

Raymond M. Leliaert, South Bend, Ind., assignor to Wheelabrator-Frye Inc., Mishawaka, Ind.

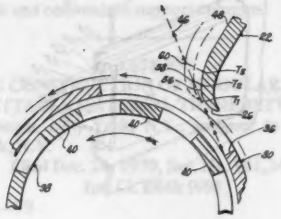
Filed March 19, 1970, Ser. No. 21,160

Int. Cl. B24c 3/00

U.S. Cl. 51—9 **7 Claims**

A centrifugal blasting wheel is provided with throwing blades which have throwing surfaces curved at their inner ends to provide a surface for initial contact with particulate material being thrown. The surfaces are thus traveling in a

plane substantially corresponding to the plane to which the particulate material is being propelled onto the blades in order



to effect a smoother and more efficient transfer of material to the surface of the blades.

3,678,630

HONING APPARATUS

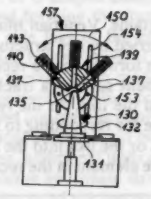
Karl Borcherding, Bad Nenndorf, Germany, assignor to Hermann Heye, Obernkirchen Allee, Germany

Filed June 26, 1970, Ser. No. 50,096

Claims priority, application Germany, July 2, 1969, P 19 33 575.2

Int. Cl. B24b *5/36, 19/00*

U.S. Cl. 51—58 **8 Claims**



A honing apparatus in which honing tools and a workpiece slide on each other in a composite rotary and oscillatory movement, has honing tools resiliently biased into engagement with the workpiece whereby a very smooth surface is quickly obtained.

3,678,631

CO-ORDINATED PERIODIC LUBRICATION SYSTEM FOR MACHINE TOOLS

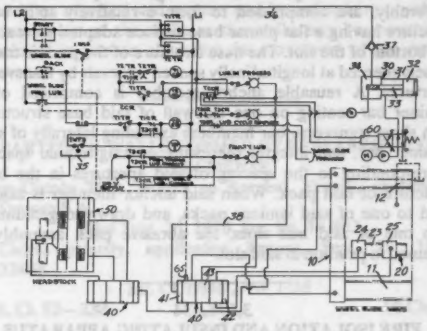
Winslow C. Payne, Worcester, and Gerard M. Trottier, Millbury, both of Mass., assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed June 29, 1970, Ser. No. 50,713

Int. Cl. B24b *49/00*

U.S. Cl. 51—165.77 **10 Claims**

The combination of a cyclically operative periodically actuated bearing assembly and/or bearing surface lubricating system with a machine tool lubricated thereby including component parts thereof relatively movable about or along bearing assemblies and/or coacting bearing surfaces according to a predetermined machining cycle by feeding means responsive to signals from automatic cyclically operative control means therefore, including means operative to actuate the periodic lubricating system responsive to selected signals from the control means to the feeding means so that periodic operation of the lubricating system is co-ordinated with the relative move-



ment of component parts of the machine tool, and monitoring means activated periodically with the lubricating system and operative to interrupt the machining cycle whenever the lubricating system fails to complete its operating cycle.

3,678,632

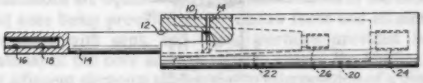
QUILL FOR MACHINE TOOLS

William C. Eversole, Latrobe, and James W. Heaton, Greensburg, both of Pa., assignors to Kennametal Inc., Labrobe, Pa.

Filed Nov. 26, 1969, Ser. No. 880,063

Int. Cl. B24b *41/00*

U.S. Cl. 51—168 **7 Claims**



The invention discloses a quill arrangement for a machine tool in which the machine end of the quill is formed of steel and the tool end of the quill is formed of a cemented metal carbide having a high degree of stiffness relative to steel.

3,678,633

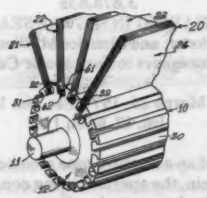
ABRASIVE PACK WITH ANCHOR ASSEMBLY

Aleck Block, Los Angeles, Calif., assignor to Merit Abrasive Products, Inc., Compton, Calif.

Continuation-in-part of Ser. No. 643,101, June 2, 1967, Pat. No. 3,548,551. This application Dec. 7, 1970, Ser. No. 95,630

Int. Cl. B24d *13/04*

U.S. Cl. 51—337 **9 Claims**



An abrasive pack and anchor assembly for mounting, in plurality, on an axial hub to provide an abrasive drum. The hub is

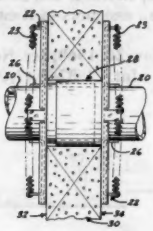
of the type having a substantially cylindrical surface, with substantially longitudinal slots recessed into said surface, each of said slots receiving one of said packs. The abrasive pack of the invention is a laminar assembly of abrasive strips having a length substantially the length of the slotted hub. The base portions of said strips are bonded together by adhesive, and preferably, are compressed to form a relatively solid base structure having a flat planar base surface adapted to seat on the bottom of the slot. The base structure of the pack is transversely pierced at longitudinally spaced intervals by transverse apertures. A reusable anchor member is comprised of a retainer bar seating on one sidewall of said base structure; with short transverse bar members extending laterally of said retainer bar, and integral therewith, at longitudinal spacing corresponding to the spacing of said apertures in the base structure of said pack. When said anchor member is assembled to one of said laminar packs, and drawn longitudinally into one of said hub slots, the abrasive pack assembly is retained in position in said slot.

3,678,634

FIRE ISOLATION AND INSULATING APPARATUS

Eugene H. Wise, Saugus, and James J. Blumenkranz, Hollywood, both of Calif., assignors to R & G Sloane Manufacturing Company, Inc., Los Angeles, Calif.

Filed Aug. 4, 1970, Ser. No. 61,253
Int. Cl. F16k *13/00, 17/00*
U.S. Cl. 52—1 **17 Claims**



Apparatus for closing off and insulating a plastic article such as a pipe section extending through a fire-resistant wall or floor to prevent the spread of fire by the progressive burning of the pipe section. The apparatus generally includes a slidably movable gate, preferably metal, which seals the walls of the plastic pipe section to interrupt it when it softens in the presence of fire and before it ignites, and baffle or screen the pipe section, thereby insuring against the spread of fire via the pipe section, such as from the hot side to the cold side of the fire-resistant wall or floor. Such apparatus may be installed on either or both sides of the wall or floor through which the plastic pipe section passes.

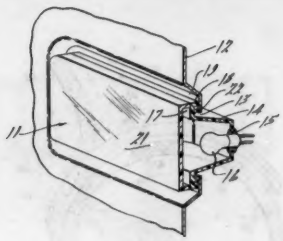
3,678,635

ASSEMBLY HAVING INTEGRAL SEALING MEANS

Louis D. Vagi, Inkster, and Maurice M. Westerdale, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed March 26, 1971, Ser. No. 128,426
Int. Cl. B60q *1/32*
U.S. Cl. 52—28 **4 Claims**

An assembly of an accessory base member to a panel having an aperture therein, the aperture being concealed beneath the base member. The base member has a continuous peripheral flange adapted to abut the panel and an integral continuous flexible skirt located between the flange and the aperture edge. With the base member mounted on the panel, the flexible skirt deforms against the panel to provide a compression



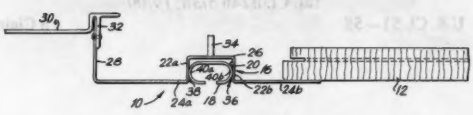
seal between the base member and the panel. The compression seal prevents entry of water and dust into the vehicle body through the aperture.

3,678,636

SUPPORTS FOR CURTAINS, VENETIAN BLINDS, AND THE LIKE

Seymour Cohen, 21 Newport Drive, Plainview, N.Y.

Filed July 22, 1970, Ser. No. 57,066
Int. Cl. A47h *1/14*; E04b *5/55*
U.S. Cl. 52—39 **7 Claims**



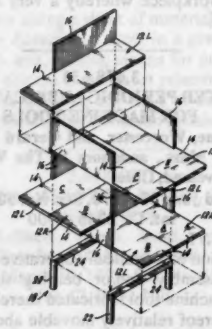
A support for curtains, Venetian blinds, and the like. The support is fixedly carried by any structural element of a building or the like and is formed with a receiving portion capable of receiving an element such as a track for carrying window shades, curtains, and the like. At the receiving portion of the support is a structure for responding to introduction of an element such as a track or the like into the receiving portion so as to releasably hold the element in the receiving portion.

3,678,637

BUILDING CONSTRUCTION SYSTEM

Arthur Klipfel, 1134 Massachusetts, Cambridge, Mass.

Filed Feb. 17, 1970, Ser. No. 11,945
Int. Cl. E04h *9/06*
U.S. Cl. 52—79 **8 Claims**



A building construction system composed of individual prefabricated structural units which are of a size that can be

manufactured at a factory and transported on conventional roadways and then assembled in stacked position to provide a multistoried structure. The individual units are paired together to provide an enlarged open expanse on one floor of the resulting building and arranged such that their exterior walls transfer the loads of units mounted above them to manageable and convenient support columns.

3,678,638

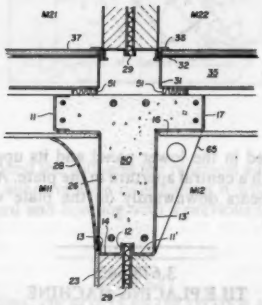
BUILDING CONSTRUCTION OF MODULAR UNITS WITH SETTABLE MATERIAL THEREBETWEEN

George Mougin, New York, N.Y., assignor to Sodeteg, Inc., New York, N.Y.

Filed Dec. 24, 1970, Ser. No. 101,341

Int. Cl. E04h 9/06

U.S. Cl. 52—79 **32 Claims**



Modular units, forming room units are built up of panel structures having an L or U-shaped channel extending around the panel structure and forming the frame, with at least one panel secured to the side legs of the channel. The channel reinforces the panels and forms a mold of sufficient strength to hold poured concrete therein. Such modular units are placed adjacent each other, preferably with a polystyrene separating sheet therebetween, and concrete is poured in the open faced channels to form vertical columns and horizontally extending beams. After hardening, additional units can be placed on top of the thus formed column and beam structure, the weight of the upper modular units, or of the top structure being carried by the columns and beams and not by the walls of the modular units. Preferably, reinforcing rods which may be welded to the channels are incorporated in the columns and beams.

3,678,639

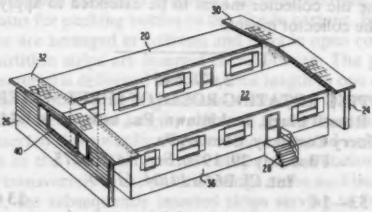
MOBILE HOME ARRANGEMENT

Leon J. Panitz, Baltimore, Md., assignor to Park Planning Inc., Baltimore, Md.

Filed Aug. 24, 1970, Ser. No. 66,201

Int. Cl. E04h 3/00

U.S. Cl. 52—79 **1 Claim**



The mobile home arrangement enables the configuration of two or more mobile home sites to give the appearance of a single conventional dwelling by positioning the mobile homes on a pad or support and providing vertical walls located at each end of the mobile homes and in between the two homes, with said walls being constructed in such a manner as to give the combined homes the attractive appearance of a permanent conventional dwelling. The mobile homes may be easily moved on or off of said support pad by a simple removal and reinstallation of the walls or the walls may be movable in whole or in part to allow for the movement of the mobile homes.

3,678,640

PARTITION-WALLS FORMED OF PREFABRICATED ELEMENTS

Jean-Claude Tillie, Marcz en Baroeul, France, assignor to Tramex S.A.

Filed Sept. 23, 1970, Ser. No. 74,803

Claims priority, application France, Sept. 25, 1969, 6932656

Int. Cl. E04b 2/10, 1/10

U.S. Cl. 52—238 **10 Claims**

A prefabricated partition-wall element constituted by a parallelepiped-shaped plate of relatively great length as compared to its width, and comprising a rigid and resistant core covered with apparent facings of smooth coatings whose dimensions are equal to the largest dimensions of the element, said core being provided on its narrow faces and all along its periphery with sunk and raised portions provided in the material of the core and intended to ensure the binding with the adjacent elements subsequent to interposition of a binder.

ERRATUM

For Class 52—311 see:
Patent No. 3,678,651

3,678,641

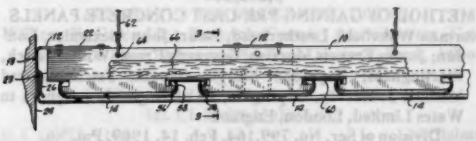
CEILING SUSPENSION SYSTEM

James A. Englund, Middlesex, and Stephen Popek, Roselle, both of N.J., assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Sept. 9, 1970, Ser. No. 70,649

Int. Cl. E04b 5/56; E04f 13/12

U.S. Cl. 52—484 **2 Claims**



A ceiling suspension system comprising a plurality of stringers having panel receiving and holding slots. The stringers are supported at opposite ends by wall carried trim brackets. Closure strips may be used to close the gap between adjoining panels. Panels having in-turned edges are seated in the stringer

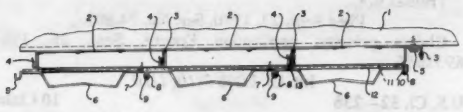
slots. Each trim bracket has a resilient tongue in one wall thereof for receiving and holding an edge trim member. In addition, the trim brackets restrict the lateral movement of the stringer and aid in the alignment of the panels.

3,678,642

INSULATED WALL PANEL

Harley D. Scott, Wexford, Pa., assignor to Elwin G. Smith & Company, Inc., Pittsburgh, Pa.

Filed June 3, 1970, Ser. No. 43,080
Int. Cl. E04d *3/361*
U.S. Cl. 52—588 4 Claims



This invention relates to an insulated wall panel assembled at the factory with a subgirt attached to a liner element fastening to a girt of such construction that the wall panels may be locked together by a plurality of male and female elements thereof extending either at right angles to, or parallel to the wall panels. The subgirt has a guide channel for a slide bar for holding the elements together to prevent horizontal movement or pulling away from the building as the result of negative wind loads.

3,678,643

PLASTIC SHEETS FOR CONCRETE REINFORCING MESH

Alfred V. Schwarz, Ste. 15-819 St. Paul Ave., Winnipeg 10, Manitoba, Canada

Filed June 18, 1970, Ser. No. 47,192
Int. Cl. E04c *5/16*
U.S. Cl. 52—686 1 Claim

Foamed plastic sheets interlock to form a continuous slab which is laid on the road bed or the like prior to pouring concrete to seal the concrete from the road bed. Chairs or the like are formed on the upper surface of the sheets to support reinforcing mesh at the required height above the sheets.

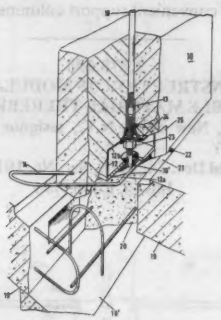
3,678,644

METHOD OF GAINING PRE-CAST CONCRETE PANELS

Norman Wakefield, Leatherhead; Stuart John Alexander, London; James Francis Morrish, Gerrards Cross; William Beck, Warlingham; Raymond Sturgis Groves, Fetcham, and Michael J. Harvey, Orpington, all of England, assignors to Wates Limited, London, England

Division of Ser. No. 799,164, Feb. 14, 1969, Pat. No. 3,566,560. This application Sept. 8, 1970, Ser. No. 70,415
Int. Cl. E04b *1/41, 1/48;* B32b *31/06*
U.S. Cl. 52—747 4 Claims

Two similar, rectangular, pre-cast, concrete, vertical wall panels disposed one above the other are joined together by a joint including a horizontal plate and a vertical attachment bar. The plate is the bottom wall of a short tube extending widthwise of the lower horizontal edge of the upper panel and is anchored in this panel by means of two oblique anchoring members fixed to the plate and embedded in the panel. The



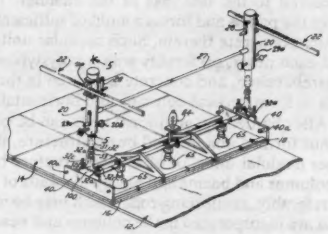
bar is embedded in the lower panel and its upper end zone projects through a central aperture in the plate. A nut screwed on this zone bears downwardly on the plate via a radially slotted washer.

3,678,645

TILE PLACING MACHINE

Juan J. Valdes, 884 43rd St., Apt. 9C, Brooklyn, N.Y.

Filed Oct. 28, 1970, Ser. No. 84,800
Int. Cl. E04f *21/20, 21/22*
U.S. Cl. 52—749 5 Claims



A system for use in applying similarly sized tiles to a prepared bed of adhesive or cement which includes a collector means to apply pressure to a plurality of tiles arranged in a row to imbed them in the adhesive and force applying means comprising extendible pistons movably supported on guide tracks above the tile collector means to be extended to apply pressure to the collector means.

3,678,646

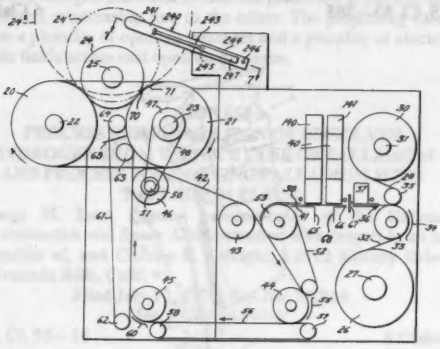
WRAPPING ROTATING ROLLS OF SHEET MATERIAL

William Russell Clark, Jenkintown, Pa., assignor to Eddystone Machinery Company, Chester, Pa.

Filed July 29, 1970, Ser. No. 59,275
Int. Cl. B65b *11/04, 61/00*
U.S. Cl. 53—14 13 Claims

To a roll of sheet material which is rotating on one or more drums of a cloth winder, a piece of paper is fed from below into the space between the roll of sheet material and a drum on which it is being wound, the roll being pressed against the

drum. Overlapping the forward edge of the piece of paper is adhesive tape with the adhesive directed toward the roll of sheet material, and this adheres to the roll. The piece of paper



is fed to surround the roll, and the rearmost edge of the piece of paper has adhesive tape overlapping it with the adhesive directed toward and bonding with a previous turn or wrap of the paper.

3,678,647

PACKAGING OF BOTTLES OR OTHER ARTICLES

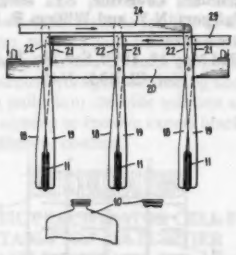
Henry M. Corderoy, Gladesville, New South Wales, Australia, assignor to A.C.I. Operations Pty. Limited, Melbourne, Victoria, Australia

Filed May 14, 1970, Ser. No. 37,207

Claims priority, application Australia, May 15, 1969, 55076/69

Int. Cl. B65b *61/00*

U.S. Cl. 53—14 **10 Claims**



The present invention relates to an improved method and apparatus for packing bottles or the like in cartons. Bottles or the like are arranged in columns and rows in open containers and partition strips are inserted therebetween. The partition strip material is delivered in continuous length to one or a plurality of partition inserting stations whereupon the material is cut off at the desired length, collected by mechanical fingers and inserted downwardly between the rows and columns of bottles or the like. The partition strips at one station are inserted transversely to the partition strips at the next immediate station, the subsequently inserted strips serving to force the first-mentioned strips downwardly between the columns or rows of partitions. This invention provides for tight packages with little or no risk of breakage as a result of relative vibration between the packed bottles.

3,678,648

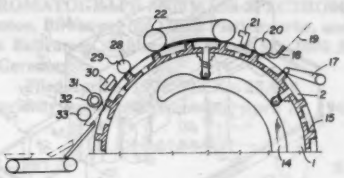
APPARATUS FOR THE PRODUCTION OF A VACUUM PACKAGE

Gerhard Leuschner, Ottendorf-Okrilla; Peter Pietsch, and Gunter Kadner, both of Dresden, all of Germany, assignors to Veb Kombinat Nagema, Dresden, Germany

Filed Jan. 14, 1971, Ser. No. 106,461

Int. Cl. B65b *31/02*

U.S. Cl. 53—112 A **5 Claims**



In an apparatus for the production of vacuum packages, comprising a drum having serially arranged mold cavities on its surface, is provided a cover means extending over at least two serially arranged mold cavities.

3,678,649

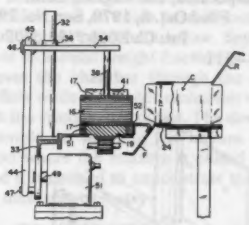
PACKAGING APPARATUS

David Clancy, Canaan, Conn., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed July 13, 1970, Ser. No. 54,241

Int. Cl. B65b *63/02*

U.S. Cl. 53—124 D **16 Claims**



Packaging apparatus comprises an intermittently moving conveyor mounting a succession of open top open side trays each containing a stack of packages and a carton filling station where a reciprocable pusher is actuated in synchronism with the conveyor to push the stack of packages into an aligned carton. The package stack in each receptacle is tamped and compacted to a lesser effective height particularly along the front and rear side edges prior to moving that receptacle into the filling station for facilitating entry of the stack into a carton and ensuring proper closure of the carton end flaps.

3,678,650

APPARATUS FOR PACKAGING COINS

William E. Green, Jr., Rockdale County, near Conyers, Ga., assignor to The Citizens and Southern National Bank, Atlanta, Ga.

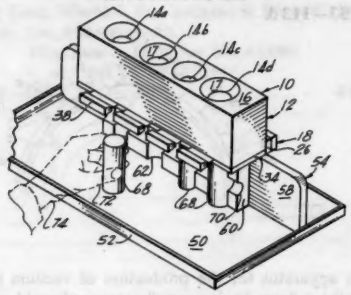
Filed June 22, 1970, Ser. No. 48,186

Int. Cl. B65b *35/02*, *5/00*

U.S. Cl. 53—159 **4 Claims**

Coins of different amounts are separated by size and then stacked by hand on top of a movable support beneath which is placed a coin package which may be a plastic tube or wound paper tube. The number of coins is determined by the height of the stack to the top of the selected mark and excess coins are removed quickly by scooping out of a depression. A solid

block of plastic may be molded or drilled with a line of vertical bores each representing a coin of a different size (and amount) and the height of the bore determines the number of coins. The block is attached to a base made from plastic or wood and on top of a frame with semi-circular, vertical grooves complimentary to a coin tube and in which tubes are



placed beneath the respective bore, but separated by a sliding release plate in which there is a hole corresponding with the respective bore. A saucer-shaped depression leads to each bore whereby excess coins are scooped out. Coins are stacked by hand in each bore until the proper height is reached and then the respective plate is moved by hand to release the coins to the respective tube.

3,678,651

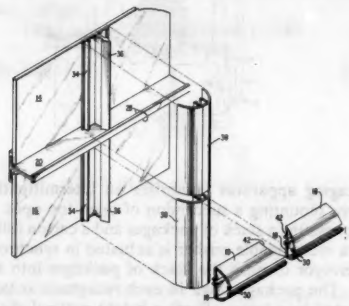
FALSE MUNTIN ASSEMBLY

Glen Elton Hicks, Statesboro, Ga., assignor to Rusco Industries, Incorporated, Los Angeles, Calif.

Filed Oct. 8, 1970, Ser. No. 79,176

Int. Cl. E06b *3/30, 3/02*

U.S. Cl. 52—311 **9 Claims**



A false muntin assembly for a window having a sash, a windowpane defining at least one light, and a glazing bead for the windowpane, which divides the windowpane into at least two lights and comprises a rigid aluminum base member overlaying the windowpane, a semi-rigid vinyl cover having the appearance of a muntin, and snap fit locking means engaging the vinyl cover onto the aluminum base. Openings formed in the glazing bead and a lip formed on the sash firmly lock the false muntin onto the windowpane without need of any additional clips or fasteners. In one embodiment, a pair of false muntins divide the window into four lights; in a second embodiment, a true muntin divides the window into two lights and the false muntin further subdivides the window into four lights.

ERRATUM

For Class 53—255 see:
Patent No. 3,678,660

3,678,652

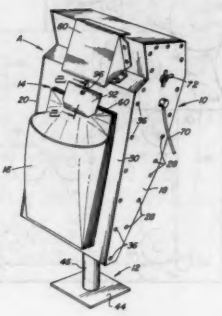
BAG OPENING APPARATUS

Anton Z. Panasewicz, Parma, Ohio, assignor to Dura-Pak, Inc., Cleveland, Ohio

Filed Dec. 28, 1970, Ser. No. 101,554

Int. Cl. B65b *43/36*

U.S. Cl. 53—385 **6 Claims**



Apparatus for opening plastic bags of the type including opposed side walls of different lengths joined along their lateral sides and one end to define an open ended bag with a tab adjacent the open end. The apparatus disclosed includes a frame assembly with a support surface that can be adjusted to different orientations. The support surface is associated with means for engaging and holding a wicket member that extends through the tabs of a stack of the bags. An air blower is carried by the frame assembly and an air outlet is arranged to direct the air stream across the stack of bags to cause the top bag to be expanded open. Additionally, a resiliently mounted tongue or baffle is carried on the support surface between the air outlet and the stack of bags to maintain the tabs down and assist in directing air into the top bag.

3,678,653

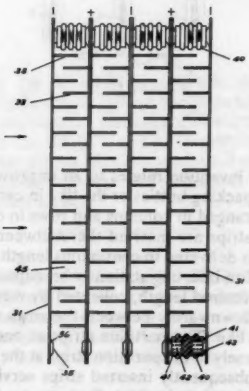
ELECTROSTATIC PRECIPITATOR

Elmer W. Buschman, Louisville, Ky., assignor to Kenneth Buschman, Fairport, N.Y. and William R. Price, Louisville, Ky., part interest to each

Filed May 11, 1970, Ser. No. 36,244

Int. Cl. B03c *3/45*

U.S. Cl. 55—2 **14 Claims**



Discloses an electrostatic precipitator of the two chamber type and specifically, a parallel plate electrostatic cell for the

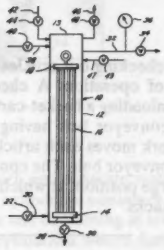
precipitation chamber of said precipitator. The parallel plate electrostatic cell is made up of a plurality of identical modular electrode units in the form of louvered plates, having reinforcing ribs and projecting vanes which are mounted so that the vanes of one plate are interleaved with the vanes of an oppositely charged plate and so that the plates are in parallel and insulated relationship one to the other. The projecting vanes form a plurality of open air passages and a plurality of electrostatic fields across said open air passages.

3,678,654

PROCESS FOR SEPARATION OF DISSOLVED HYDROGEN FROM WATER BY USE OF PALLADIUM AND PROCESS FOR COATING PALLADIUM WITH PALLADIUM BLACK

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Charles F. Albright, 12512 Kenney Drive, Granada Hills, Calif.

Filed July 17, 1970, Ser. No. 55,806
Int. Cl. B01d *59/10*
U.S. Cl. 55—16 8 Claims



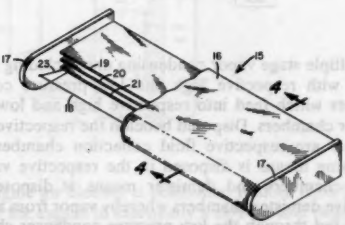
Dissolved gaseous hydrogen in water is separated from the water by placing the water in contact with a thin metallic film of palladium or palladium-silver alloy, both sides of which film have been coated with palladium black. The other side of the film has less pressure than the partial pressure of the hydrogen dissolved in the water. The hydrogen dissolved in the water permeates the film and passes to the other side of it. Preferably the palladium black is applied to the metallic film by etching the film, rubbing palladium chloride powder on the film, reducing the palladium chloride to palladium black by exposing it to gaseous hydrogen, depositing additional palladium black from a palladium chloride solution and rubbing the palladium black coating to remove excess black and provide a tightly bonded adherent coating.

3,678,655

ELECTROSTATIC PRECIPITATOR CELL FOR DESK OR TABLETOP AIR PURIFIER

Ronald N. Rose, 1237 E. Fifth St., St. Paul, Minn.

Filed June 3, 1969, Ser. No. 829,943
Int. Cl. B03c *3/38*
U.S. Cl. 55—128 6 Claims



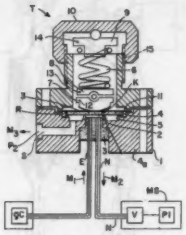
An electronic air purifier having the ionizing chamber and the collecting plates all formed into an integral cell which may be easily removed from the main housing of a desk or tabletop air purifier for cleaning, repair or replacement.

3,678,656

SEPARATING DEVICE FOR MIXTURES OF GASEOUS OR VAPOROUS SUBSTANCES, ESPECIALLY FOR SEPARATING A CARRIER GAS FROM A FRACTION TO BE ANALYZED IN A COMBINED GASCHROMATOGRAPH AND MASS-SPECTROMETER

Curt Brunnee, Birkenweg 24, 2820 Platjenwerbe, and Hans-Joachim Bultemann, Schlossparkstrasse 57, 2800 Bremen, both of Germany

Filed April 6, 1970, Ser. No. 25,919
Claims priority, application Germany, April 17, 1969, P 19 19 460.6
Int. Cl. B01d *53/02*
U.S. Cl. 55—197 8 Claims



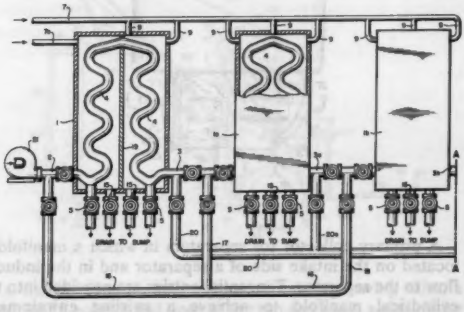
This invention relates to a device for separating mixtures of gasses or vapors. The device utilizes a separating chamber having an inlet for admitting the mixture by viscous flow. The chamber has two outlets, one of which permits molecular flow and the other of which permits viscous flow. Separation occurs when the lower molecular weight fraction of the mixture predominantly leaves the chamber through the outlet permitting molecular flow while the higher molecular weight fraction leaves through the viscous flow outlet. The device may be employed, for example, to separate the helium carrier gas from a hydrocarbon where the mixture is eluted from a gas chromatograph and it is desired to concentrate the hydrocarbon for analysis by mass spectrometry.

3,678,657

FLUID POLLUTION ERADICATOR SYSTEM INCLUDING AN AIR BUBBLE SCRUBBING UNIT

Edith A. Hale, 310 E. 44th St., New York, N.Y.

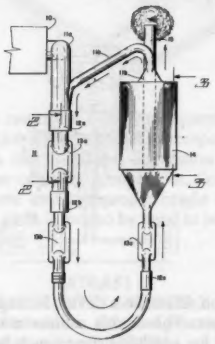
Continuation-in-part of Ser. No. 656,447, July 27, 1967, abandoned. This application Jan. 7, 1970, Ser. No. 1,148
Int. Cl. B01d *50/00*
U.S. Cl. 55—222 5 Claims



A fluid pollution eradication and air bubbling system having a cooling condenser unit for removing vapor, a baffle plate

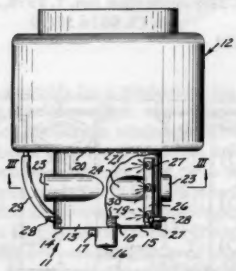
unit for removing solid impurities, and a fluid scrubbing and neutralizing unit. The baffle unit contains removable baffle plates with air foils which are coated with a sticky substance for removing the impurities from the fluid while in a state of turbulence and the fluid scrubbing and neutralizing unit comprises a series of bubbling tanks for scrubbing, neutralizing and deodorizing the polluted fluid. Preferably an alternate bubbling unit is provided whereby the first unit may be shut down completely for repair or cleaning purposes.

3,678,658
AIR POLLUTION CIRCULATION DEVICE
Thomas F. Bayze, 731 W. Tennessee, Tucson, Ariz.
Filed June 22, 1970, Ser. No. 48,123
Int. Cl. B01d *50/00*
U.S. Cl. 55—230 **1 Claim**



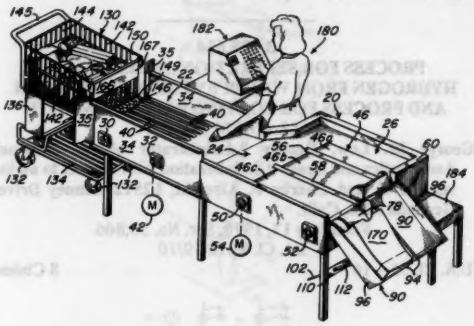
An apparatus for treating and purifying combustion products from exhaust gases before they are admitted to atmosphere by recirculation of the gases during which time they are washed and rewashed, dried and redried until solid contaminants and water soluble substances are removed from the gases.

3,678,659
PRIMARY COLLECTOR AND MANIFOLD
Arthur C. Schouw, 700 S. McMillan St., Owosso, Mich.
Filed Sept. 10, 1969, Ser. No. 856,656
Int. Cl. B01d *47/06*
U.S. Cl. 55—238 **3 Claims**



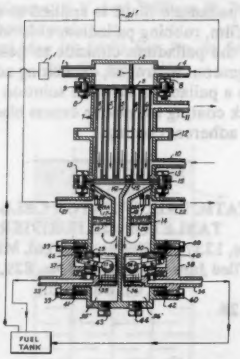
A primary collector for separators in which a manifold is located on the intake side of a separator and in the induced flow to the separator. Tangential entries are provided into the cylindrical manifold to achieve a swirling entrainment. Selected scrubbing provisions are provided and an axial drain allows removal of separated material.

3,678,660
UNLOAD, CHECK, AND BAG APPARATUS FOR SUPERMARKETS
Malcolm E. Musser, P.O. Box 386, Jackson Center, Ohio
Filed June 29, 1970, Ser. No. 50,467
Int. Cl. B65b *39/00, 67/04*
U.S. Cl. 53—255 **12 Claims**



Apparatus for checking out articles of merchandise in a supermarket type of operation. A checkout counter includes mechanism for unloading a basket-cart. The checkout counter also includes a conveyor belt having a plurality of sections. The checkout clerk moves each article checked to one of the sections of the conveyor belt. The conveyor belt moves the articles to a discharge position, at which the articles fall into one or more bags or sacks.

3,678,661
MULTIPLE STAGE VAPOR CONDENSING UNIT
Edwin R. Davis, 2020 Beverly Plaza, Apt. 213, Long Beach, Calif.
Filed Sept. 10, 1970, Ser. No. 71,053
Int. Cl. B01d *50/00*
U.S. Cl. 55—269 **7 Claims**



A multiple stage vapor condensing unit including a housing formed with respective high and low pressure condensing chambers which feed into respective high and low pressure demister chambers. Disposed beneath the respective demister chambers are respective fluid collection chambers. Vapor condensing means is disposed in the respective vapor condenser chambers and demister means is disposed in the respective demister chambers whereby vapor from a fuel tank may be fed through the low pressure condenser chamber to the low pressure demister chamber to condense a portion of

such vapor and collect the resulting fluid in the low pressure fluid collection chamber. The vapor emitting from the low pressure demister chamber may then be compressed and fed through the high pressure condenser chamber to the high pressure demister chamber where additional vapor is condensed to produce fluid for collection in the high pressure fluid chamber.

3,678,662

FILTER FOR MOISTURE AND OIL VAPOR

George A. Grote, Glen Rock, Pa., assignor to National Bank and Trust Company of Central Pennsylvania, Administrator, d.b.n.c.t.a. of the Estate of Willard C. Beach, deceased, and Administrator c.t.a. of the Estate of Mary B. Beach, Hanover, Pa.

Filed May 14, 1970, Ser. No. 37,125
Int. Cl. B01d 53/14
U.S. Cl. 55—387 3 Claims

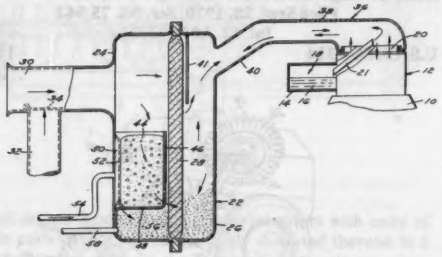
A filter system to absorb and separate water and oil vapors from gases comprising a cylindrical container connectable in a supply line for said gases and containing at least one filter unit comprising a seamless cylindrical sleeve formed from textile material having a predetermined uniform porosity, the diameter of said sleeve being slightly greater than the inner diameter of said container so that when the filter unit is supported between porous supporting means within said sleeve the periphery of the sleeve will smoothly and tightly engage the inner surface of the container and thereby prevent channeling and bypassing of gases between the sleeve and the inner surface of the container during use.

3,678,663

AIR CLEANER REMOTE FROM ENGINE AND HAVING INTEGRATED FUEL VAPOR ADSORPTION MEANS

Gunnar W. Hansen, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sept. 2, 1970, Ser. No. 68,839
Int. Cl. B01d 53/04
U.S. Cl. 55—387 4 Claims



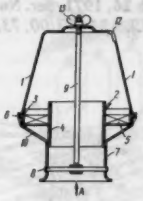
The engine air cleaner is positioned remote from but connected to the engine in essentially a side-by-side relationship. The air cleaner is vertically disposed to define a lower reservoir that traps excess fuel vapors flowing thereinto from the carburetor, and contains a vapor adsorption means to store the vapors and subsequently return them to the engine.

3,678,664

INERTIA-TYPE AIR CLEANER

Sholom Yakovlevich Rubinshtein, ulitsa Kozlova, 51/2, kv. 22; Mikhail Artemievich Babin, ulitsa Kropotkina, 67, kv. 1; Anatoly Lvovich Gutman, ulitsa Eniseiskaya, 6, kv. 14; Viktor Dmitrievich Naumenko, ulitsa Vaneeva, 14, kv. 16; Evgeny Mikhailovich Orlov, ulitsa Kozlova, 2, kv. 2; Vladimir Alexandrovich Presman, 2-oi Dolgobrodsky pereulok, 10, kv. 8, all of Minsk; Veniamin Evnovich Maev, Leninsky prospekt 60/6, korpus 8, kv. 62, and Fedor Alexeevich Bondarenko, 1 Botkinsky Proezd, 6, kv. 98, both of Moscow, all of U.S.S.R.

Filed Jan. 27, 1970, Ser. No. 6,252
Int. Cl. B01d 45/12
U.S. Cl. 55—449 2 Claims



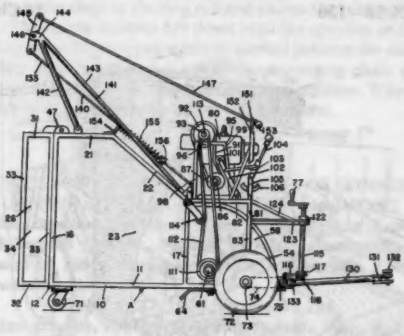
An inertia-type air cleaner is provided with a housing having an open end. A centrifugal deflector blade structure has an external ring positioned against the open end of the housing. An outlet conduit has an open end positioned against the ring from the side thereof remote from the housing. A laterally extending member is secured internally of the outlet conduit and is connected with a tightening rod which, when tightened from outside the housing, effects compression of the external ring of the centrifugal deflector blade structure between the respective opposing open ends of the housing and the outlet conduit. The outlet conduit is provided with openings in the side wall thereof through which air enters the cleaner.

3,678,665

PORTABLE LAWN RAKING DEVICES

Rudi G. Stanke, Minneapolis, Minn., assignor to Johnson Hydraulic Equipment Co., Minneapolis, Minn.

Filed Aug. 9, 1971, Ser. No. 170,078
Int. Cl. A01d 51/00
U.S. Cl. 56—13.4 8 Claims



A tractor drawn wheel supported housing having sides, a front and a bottom and open at the top and back, a closure for the housing having a rear wall structure and an upper wall structure connected together and closing the open top and

back of the housing and hingedly connected to the side walls at the upper and rearward portions of the same, said housing having an arcuate bottom along which the outer end of the upper wall structure travels to eject the matter collected in the receiving compartment of the housing and a rotary rake at the forward portion of the housing directing the matter picked up through an opening between the bottom and top of the housing into the receiving compartment of the housing. Closure operating means serves to move the closure from closing position to ejecting position.

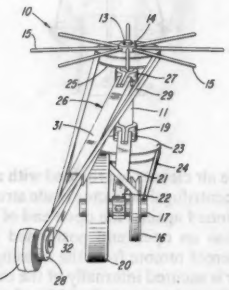
Applicant's device is extremely simple in construction and can be manually operated and dumped by the operator while seated on the seat of a power driven garden tractor, by which it is hauled.

3,678,666

BRANCH GUIDE FOR A BERRY HARVESTING MACHINE

Paul Holzmann, Rte. 3, Box 151, South Haven, Mich.

Filed March 26, 1971, Ser. No. 128,316
Int. Cl. A01d *73/00*, *73/00*
U.S. Cl. 56—119 **6 Claims**



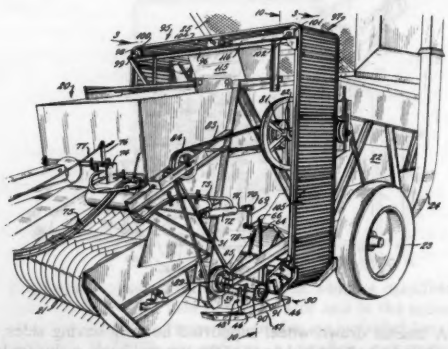
A branch guide is mounted in front of the harvesting machine and comprises a combination of a forwardly-inclined conveyor and rotating, circumferentially spaced tines. The conveyor picks up and elevates berry-laden branches in engagement with the tines which, in turn, deflect the branches into the harvesting machine.

3,678,667

LOOSE PEANUT RECOVERY APPARATUS

William R. Long, Tarboro, N.C., assignor to Long Mfg. N.C. Inc., Tarboro, N.C.

Filed Aug. 2, 1971, Ser. No. 168,296
Int. Cl. A01d *45/24*
U.S. Cl. 56—130 **14 Claims**



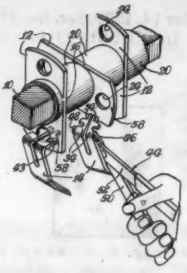
Apparatus for gathering loose peanuts from the ground during the harvesting of the peanut crop so that a substantial portion of the crop, which previously had been lost, can be recovered. The apparatus includes a sweep assembly for removing peanuts from the ground and transferring the same to a peanut recovery unit which raises the peanuts to a higher elevation and discharges the same into a receptacle.

3,678,668

MOWER BLADE AND CONNECTION THEREFOR

Carl W. Mott, Lake Ozark, Mo., assignor to Mott Corporation, LaGrange, Ill.

Continuation-in-part of Ser. No. 54,246, July 13, 1970, abandoned. This application Sept. 25, 1970, Ser. No. 75,347
Int. Cl. A01d *55/22*
U.S. Cl. 56—294 **17 Claims**



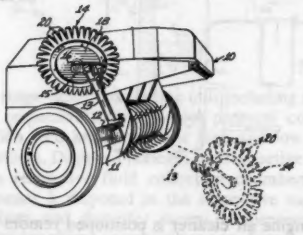
A connection for attaching a mower blade directly to a lug provided on a mower shaft. The blade comprises a pair of resilient fingers cooperating with an opening provided in the lug. The opening in the lug may be circular or non-circular having a long and a short dimension. The long dimension of the non-circular opening is such that when the blade is turned to the long dimension and the fingers are compressed, the fingers will pass through the opening. The short dimension is such that when the blade is turned to such short dimension, the blade cannot be compressed sufficiently to be removed from the opening of the lug. The blade may be removed from the circular opening, regardless of the position of the blade in the opening, by compressing the blade. To connect the blade to the lug of the shaft, the fingers of the blade are gripped in a tool and compressed, and the compressed fingers are then inserted into the opening in the lug. Notches provided in the edges of the fingers are aligned with the margin of the opening in the lug, and the fingers are then released so that the notches loosely engage the lug to retain the blade on the lug. By a converse operation the blade may be removed from the lug.

3,678,669

SWEEPER ATTACHMENT FOR HARVESTING MACHINERY

Henry J. Czajkowski, 301 24th Ave., Yuma, Ariz.

Filed Sept. 28, 1970, Ser. No. 75,942
Int. Cl. A01d *43/02*
U.S. Cl. 56—314 **1 Claim**



A sweeper wheel having resilient fingers positioned on its periphery which is adjustably mounted on the free end of a

support arm extending laterally out from the front end of a harvesting machine wherein said sweeper wheel axle is mounted in a plate which provides for predetermined arcuate adjustment of the sweeper wheel relative to its support arm.

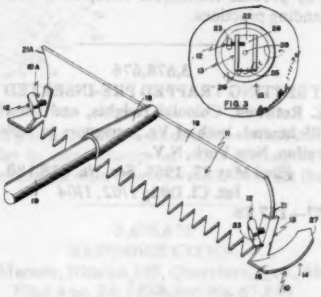
ERRATUM

For Class 56—327 see:
Patent No. 3,678,677

3,678,670
ATTACHMENT FOR RAKES

Rudolf Welz, Box 28, Group 515, R.R. #5, Winnipeg, Manitoba, Canada

Filed June 2, 1971, Ser. No. 149,184
Int. Cl. A01d 7/00
U.S. Cl. 56—400.14 1 Claim

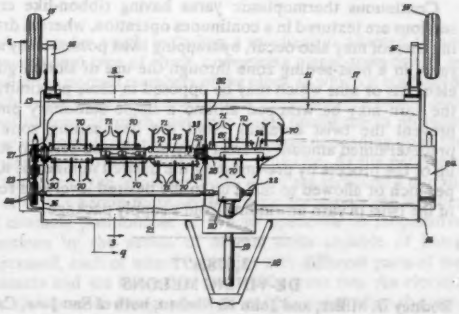


An attachment including a shoe is detachably securable to each end of toothed or blade-type rake and is adjustable to control the penetration of the raking element in the soil or grass.

3,678,671
FLAIL SHREDDER

Thomas J. Scarnato, Barrington; James J. Dryan, Chicago; Craig M. Lawler, Downers Grove, and Robert Sorensen, Glen Ellyn, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 781,332, Dec. 5, 1968, abandoned.
This application Feb. 26, 1971, Ser. No. 119,373
Int. Cl. A01d 49/00
U.S. Cl. 56—505 11 Claims

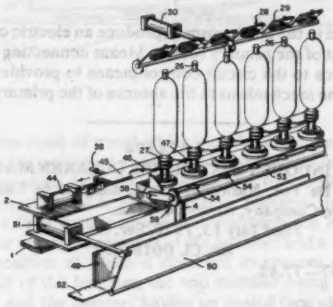


A flail mower having a pair of coaxial rotors with units of multiple pairs of flail knives swingably mounted thereon in a helicoidal pattern wherein the knives of each unit are selectively accessible for quick removal, a rotor housing having an interior rotor-supporting partition disposed off center to fall between crop rows and said housing having a tear-drop configuration providing increasing clearances in the direction of flail knife rotation and crop flow, the rotors being driven by a tension-correcting belt drive arrangement effective to dampen shock loading, wherein the helicoidal pattern of knives in combination with the tear-drop housing configuration and the belt drive arrangement yield mower power output characteristics that demand minimal power input which together with the off-center arranged partition maximize field efficiency.

3,678,672
QUILL OR BOBBIN SPINNING AND WINDING FRAME WITH SEMI-AUTOMATIC DOFFING AND DONNING

Charles David Brissey, and Marvin Nathaniel Trotter, both of Anderson, S.C., assignors to J. P. Stevens & Co. Inc., New York, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,463
Int. Cl. D01h 9/00
U.S. Cl. 57—52 22 Claims



A spinning frame or a ring twister frame with semi-automatic doffing and donning is provided with a doffing bar on the usual ring rail with projections which in one position of the doffing bar are opposite each wound bobbin. The ring rail is pneumatically lowered when the bobbins are fully wound to a position just below the normal starting position and the doffing bar moved so that the projections are underneath the bottom ends of the bobbins. The pneumatic cylinder used to bear down the rail is double acting, and when the doffing cycle is manually started raises the ring rail to a position high enough to lift the wound bobbins off their spindles. At the same time, a wall is tilted, forming a chute into which the bobbins fall, and a conveyor in the bottom of the chute carried them to a full bobbin container. In the case of spinning frames, there is carried on the ring rail a donning tube with holes opposite each spindle, and before initiating the doffing cycle the operator fills these holes with empty cores or bobbins upside down. The next actuation pneumatically brings the donning tube over the rings in the ring rail and causes the tube to rotate 180°. The empty bobbins fall down onto the spindles and then the ring rail is borne down again to normal position for starting winding. This produces a slack on the traversing chain and a pneumatic cylinder rewinds this to starting position. When the starting button is pushed, winding starts as usual.

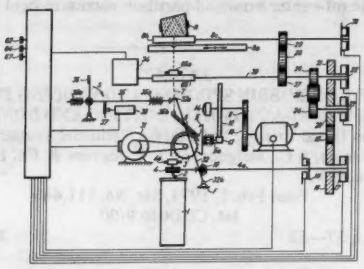
3,678,673
DEVICE FOR THE MASS SPINNING-IN OF SPINNING UNITS IN SPINDLELESS SPINNING MACHINES

Miloslav Prochazka, Nachod; Karel Seidl, Cerveny Kostelec, and Bedrich Cesenek, Nachod, all of Czechoslovakia, assignors to Elitex Zavody textilniho Strojirenstvi, Liberec, Czechoslovakia

Filed July 27, 1970, Ser. No. 58,228
Claims priority, application Czechoslovakia, Aug. 8, 1969, 5506-69
Int. Cl. D01h 1/12
U.S. Cl. 57—58.95 13 Claims

A spindleless spinning machine having electrically operable fiber feed, spinning and yarn withdrawing mechanisms. The

devices is provided with a primary source of electric current and circuit means for synchronously operating the mechanism. An auxilliary power generator is mechanically



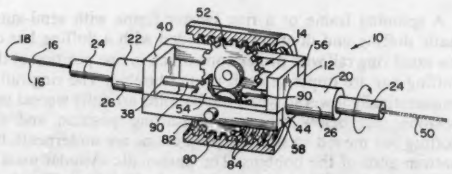
connected to the mechanism to produce an electric current independent of the primary source. Means connecting the auxilliary source to the circuit control means to provide power to operate the mechanisms in the absense of the primary source.

3,678,674

CONTINUOUS TWISTER PIPE CLEANER MACHINE

John M. De Voe, Nashville, Tenn., assignor to United States Tobacco Company, Nashville, Tenn.

Filed July 13, 1970, Ser. No. 54,482
Int. Cl. D01h 7/92
U.S. Cl. 57—77.42 **5 Claims**



In a machine for making pipe cleaners having a twisting mechanism for rotating and twisting wires about each other to lock short cotton strands or fibrils therebetween, the twisting mechanism has a rotatably mounted frame which extends through a generally cylindrical stationary worm gear having an internal spiral thread configuration; the frame rotatably mounts a pair of generally circular gripping members positioned in vertically spaced relation with respect to each other having cooperating peripheral walls forming a purchase therebetween which is adapted to engage the wires and the fibrils; spur gears rotatably mounted in the frame and drivingly connected to the gripping members are adapted to engage the internal thread configuration of the stationary worm gear to rotate the gripping members during rotation of the frame whereby the wires and fibrils are drawn through the frame and twisted about each other to lock the fibrils therebetween.

3,678,675

ANTISTATIC FABRIC

William G. Klein, 13 Washburn Ave., Wellesley Hills, Mass.

Filed April 20, 1970, Ser. No. 29,822
Int. Cl. D02g 3/04, 3/12
U.S. Cl. 57—140 BY **19 Claims**

A fine heterogeneous hybrid spun yarn is blended from electrostatically conductive staple fibers and electrostatically non-conductive staple fibers so that the yarn is electrostatically conductive only over short distance lengths. When used in pile fabrics, such as carpets, the fine y yearn is introduced with at least some of the carpet facing yarns during the carpet making operations. The resultant carpet structure substantially eliminates electrostatic shock to a human walking across the carpet and approaching a ground such as a light switch, radio, or another person. Such a carpet provides control for

the generation of static electricity and does not constitute a dangerous floor covering.

The unique heterogeneous hybrid spun blended yarn is achieved by process techniques completely contrary to accepted blending practices.

3,678,676

HEAT SETTING TRAPPED PRE-INSERTED TWIST

Ronald E. Rothwell, Colonial Heights, and Charles W. Beringer, Richmond, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed May 27, 1969, Ser. No. 828,180
Int. Cl. D02g 1/02, 1/04
U.S. Cl. 57—157 TS **5 Claims**

Continuous thermoplastic yarns having ribbon-like cross sections are textured in a continuous operation, wherein drawing thereof may also occur, by trapping twist possessed by said yarns in a heat-setting zone through the use of slotted guide elements or pins which may be opposed in close proximity or the yarn may be wrapped around a single stationary pin to prevent the twist escaping from the heat-setting zone. A predetermined amount of twist may be inserted prior to start-up of the process by pre-inserting the desired number of turns per inch or allowed to build up to the desired level as a result of the twist in yarn unwinding from a supply package.

3,678,677

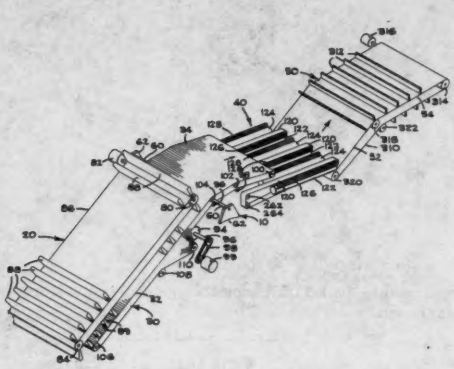
DE-VINING MELONS

Rodney D. Miller, and John K. Nielsen, both of San Jose, Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Aug. 13, 1970, Ser. No. 63,370
Int. Cl. A01g 19/00
U.S. Cl. 56—327 **19 Claims**

In a once-over field harvesting operation, melons and attached vines are gathered. The melons and their vines are dropped onto a parallel roll de-viner assembly having a trough conveyor that runs axially along cooperating vine removal and pinch rollers that grip the vines from the sides of the fruit and

direct them downwardly between adjacent lanes. The roller assembly is independently pivoted on the frame to adjust its angle of inclination which is selected to minimize melon



bounce. The pinch rollers are mounted for a limited radial motion in order to clear clumps of vines passing between the pinch rollers and the vine removal rollers beneath them.

3,678,678

REMINDER CLOCK

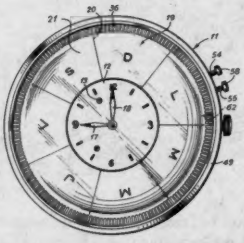
Alfonso O. Macedo, Hidalgo 135, Queretaro, Qro., Mexico

Filed Aug. 28, 1970, Ser. No. 67,848

Claims priority, application Mexico, April 2, 1970, 118,356

Int. Cl. G04b *23/06*

U.S. Cl. 58—16.5 **8 Claims**



A reminder clock including a mechanism adapted to any conventional type of clock, comprising a gear-train driven by one of the normal members of the clock to which it is adapted, such as the hour hand axle, which by means of a pinion coupled thereto, through said gear-train, finally drives an inner gear with a shift ratio reduced into a scale depending upon the days wanted to be included in the schedule. At the periphery of the face of the reminder clock, there are included a plurality of slots wherein there are located a corresponding number of contacts positionable at will to operative or inoperative positions by the action of several bolts capable of being depressed, each of which coincides with different parts of the contacts and are located in a movable outer rim. An electric circuit is provided to produce an audible signal when the contacts in operative position are engaged by a contact of the circuit. The inner gear can be fastened to a face movable around the conventional face and including at the periphery thereof the positionable contacts which in due time can contact the circuit contact. Alternatively the face with the positionable contacts is fixed to or integral with the conventional face, and the inner gear synchronously shifts the circuit contact so that it can opportunely connect the now stationary positionable contacts.

3,678,679

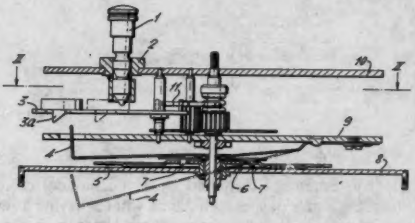
ALARM CLOCKS AND WATCHES

Admond K. Lee, and Kwok-Ming Wong, both of Kowloon, Hong Kong, assignors to Eastern Time Limited, Kowloon, Hong Kong

Filed July 7, 1970, Ser. No. 52,845

Claims priority, application Great Britain, June 26, 1969, 32,386/69

U.S. Cl. 58—21.15 **4 Claims**



An alarm clock or watch which includes a hammer pivotally mounted for reciprocal movement intermittently to engage a gong to produce an audible noise, and a trip member and a switch member each independently movable between a respective first position at which it intercepts the hammer to prevent or restrict movement of the hammer and a respective second position at which it does not so prevent or restrict movement of the hammer, the trip member being resiliently mounted and the hammer having an angled face at a portion which can contact the trip member whereby if the trip member is moved from its second position to its first position when the hammer is in a position such that the trip spring in its first position lies between the hammer and the rest position of the hammer and when, if the switch member is moved to its first position, the angled face of the hammer can cam the trip member out of the path of the hammer to permit the hammer to return to a rest position without damage to the trip member or the hammer.

3,678,680

AN ELECTRONIC TIMEPIECE

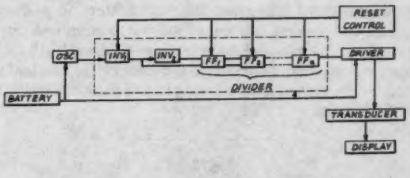
Kinji Fujita, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 24, 1971, Ser. No. 118,333

Claims priority, application Japan, Feb. 3, 1970, 45/17120

Int. Cl. G04c *3/00, 9/00*

U.S. Cl. 58—23 R **4 Claims**



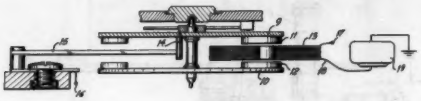
A resetting apparatus for an electronic timepiece wherein a frequency divider circuit having a logic circuit incorporating complimentary MOST is provided with a control means for resetting said divider circuit which is also connected to the input amplifier of said divider circuit to cut said input amplifier off.

3,678,681

MECHANICALLY SWITCHED ELECTRIC TIMEPIECE

Toshiaki Saito, and Toshihiko Oki, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed July 27, 1971, Ser. No. 166,499
Claims priority, application Japan, July 29, 1970, 45/66014
Int. Cl. G04c *3/04, 23/12*
U.S. Cl. 58—28 A 11 Claims



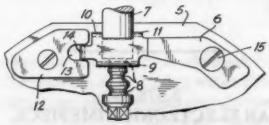
An electric timepiece switched by a mechanical contact point including a pair of spaced balance wheels having at least two pairs of permanent magnets mounted thereon in spaced facing relation. Coil means are fixedly mounted between said two balance wheels. Mechanical contact means are provided including actuating means mounted on said balance wheels for closing a circuit between said coil and an electric source during a certain range of one reciprocation of said balance wheels to apply a driving energy to said magnet.

3,678,682

STRUCTURE FOR POSITIONING A WATCH STEM

Mamoru Miyasaka; Hirohisa Kurita, and Hideo Furihata, all of Shimosuwa-Machi, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Toyko, Japan

Filed July 28, 1971, Ser. No. 166,798
Claims priority, application Japan, July 31, 1970, 45/66508
Int. Cl. G04b *19/24, 37/06*
U.S. Cl. 58—58 2 Claims



A watch stem having annular grooves thereon is precisely positioned by means of a leaf spring held at one end to a base plate. Proximate the other end of the leaf spring a tab bent toward the base plate seats in one of the annular grooves. Second and third tabs span the watch stem in a diametral direction and prevent motion of the watch stem in a direction transverse to the axis. A fourth tab is positioned by the walls of a notch in a member fastened to the base plate. The leaf spring is thereby prevented from moving in a direction parallel to the axis of the stem.

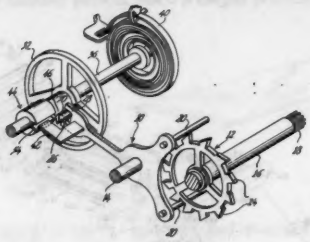
3,678,683

ONE-PIECE ROLLER-IMPULSE MEMBER FOR TIMEPIECE ESCAPEMENT

Edward F. Cielaszyk, Oglesby, Ill., assignor to General Time Corporation, Phoenix, Ariz.

Filed Feb. 26, 1971, Ser. No. 119,265
Int. Cl. G04b *15/08*
U.S. Cl. 58—122 2 Claims

A one-piece safety roller and impulse member for a timepiece escapement control is disclosed. The combination element is a low coefficient of friction engineering plastic and serves the control purpose of two separate elements heretofore used in the art of timepiece lever escapements to which this invention pertains.

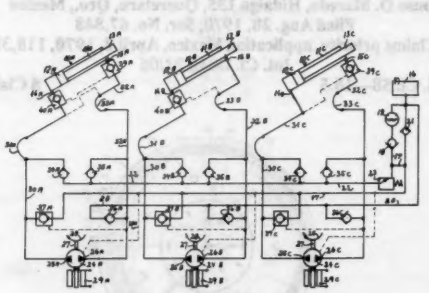


3,678,684

HYDRAULIC SYSTEMS

Leif Erik Sorensen, Roma, Italy, assignor to Anstailt Fur Elektrohydraulische Anlagen, Vaduz, Liechtenstein

Filed Sept. 30, 1970, Ser. No. 76,760
Claims priority, application Denmark, Oct. 6, 1969, 5297/69
Int. Cl. F02b *73/00*
U.S. Cl. 60—19 11 Claims



This invention relates to a hydraulic system for example for use in an earth moving machine, an excavator, a jib crane, or a corresponding machine for contracting activities, comprising at least one hydraulic double acting hydraulic motor, each being controlable and reversible through a control device, and a pump unit powered by a prime mover, for example a diesel engine or an electric motor, for providing the required hydraulic effect.

3,678,685

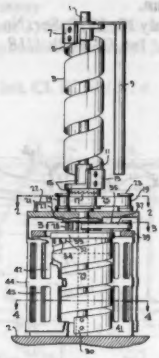
SOLAR ENERGY POWERED HELIOTROPE

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Ralph Crawford, Cupertino, Calif.

Filed Sept. 25, 1970, Ser. No. 75,431
Int. Cl. F03g *7/06, 7/02*
U.S. Cl. 60—23 12 Claims

This invention relates to a solar energy powered heliotrope which functions in a passive, stored energy manner to orient a solar array towards the sun. A bimetallic motor element is activated by solar energy to generate a work output. A constant torque spring assembly coupled to the motor element stores useful energy as a function of the work output. A bimetallic sensing element detects misorientation between the solar array and the sun. An escapement mechanism is actuated by the sensing element whenever misorientation between the

solar array and the sun is detected; the escapement mechanism automatically and incrementally releases the



stored energy to rotate the solar array in discrete increments until it is oriented towards the sun.

3,678,686

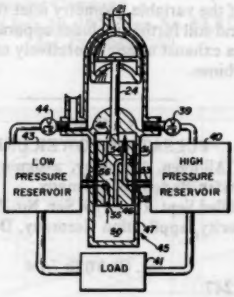
MODIFIED STIRLING CYCLE ENGINE-COMPRESSOR HAVING A FREELY RECIPROCABLE DISPLACER PISTON

Keith E. Buck, Alamo, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

Division of Ser. No. 744,204, July 11, 1968, Pat. No. 3,597,766. This application Feb. 20, 1970, Ser. No. 12,986

Int. Cl. F03g 7/06

U.S. Cl. 60—24 **2 Claims**



A modified Stirling cycle engine operable as a compressor and having its displacer piston directly connected to a reversing piston to which high and low pressures are alternately applied at opposite ends for reciprocably driving the pistons. In one embodiment, the reversing piston is mounted in a double acting compression cylinder which acts as an oscillating spring to drive the pistons whereby energy to sustain oscillation of the reversing piston within the compression cylinder is supplied directly from the displacer piston. In another embodiment, the pistons are driven by high and low pressure gases alternately applied from respective reservoirs to opposite sides of the reversing piston through valves operated by the reversing piston. The modified Stirling cycle engine is capable of unattended operation over a period of years in an inaccessible location and therefore, is especially well suited for supplying motive power for an artificial heart pumping system.

3,678,687

SEALING MEANS BETWEEN MASTER CYLINDER AND BRAKE BOOSTER

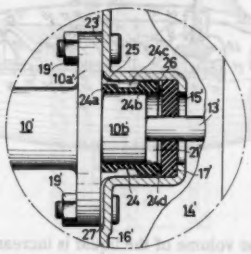
Shigeru Watabe, Kariya, and Atsushi Ohmi, Nagoya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi Pref., Japan

Filed Oct. 23, 1970, Ser. No. 83,535

Claims priority, application Japan, Oct. 24, 1969, 44/101531

Int. Cl. F15b 7/06; F16j 15/56

U.S. Cl. 60—54.6 P **4 Claims**



A sealing member for preventing liquid entrance into the master cylinder housing from the clearance of the connecting portion between the master cylinder housing and the brake booster housing, said sealing member being formed in a tubular shape and fitted on a sleeve of the master cylinder housing, comprising an axial projection normally making contact with the booster housing, and an air compensating slot.

3,678,688

HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

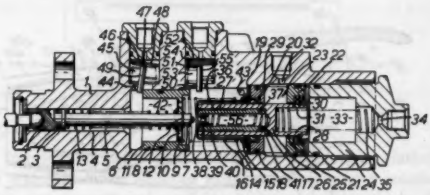
Brian Ingram, Balsall Common, England, assignor to Girling Limited, Birmingham, England

Division of Ser. No. 18,039, March 10, 1970, Pat. No. 3,618,320. This application Dec. 15, 1970, Ser. No. 98,327

Claims priority, application Great Britain, March 28, 1969, 16,377/69

Int. Cl. F15b 7/00, 11/08

U.S. Cl. 60—54.6 R **6 Claims**



In a power operated master cylinder, two tipping valves control the inlet and outlet ports for the pressure fluid and the stems of the tipping valves are engaged by a follower resiliently connected to the positively actuated piston, the follower being guided in the cylinder bore.

3,678,689

SUBMERGED MULTISTAGE PUMP USABLE AS PROPULSION UNIT

Samford P. Ishiwata, 305 E. 86th St., New York, N.Y.

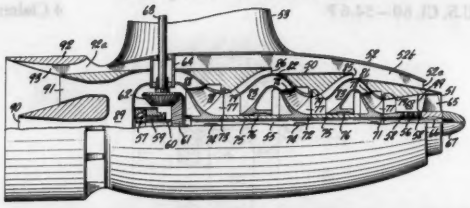
Filed Sept. 4, 1970, Ser. No. 69,800

Int. Cl. B63h 11/00; F02k 1/00, 1/24

U.S. Cl. 60—221 **10 Claims**

A submerged pump comprising a plurality of coaxial impellers arranged in series in an elongated casing having an inlet at

one end and an outlet at the other and providing a pump chamber for each impeller and connecting passageways between the pump chambers, has additional inlets opening from the exterior of the casing into the connecting passageways between successive pump chambers. The velocity of liquid being pumped is increased by successive impellers and the volume of the liquid is increased by the liquid drawn in through the additional inlets. When used as a submerged propulsion unit the pump is of streamlined configuration and is surrounded by a shroud. Forward and reverse propulsion are selectively provided by directing the pump discharge to rearwardly or forwardly directed nozzles. The pump can also be used as a bow-thruster in a vessel.



3,678,690

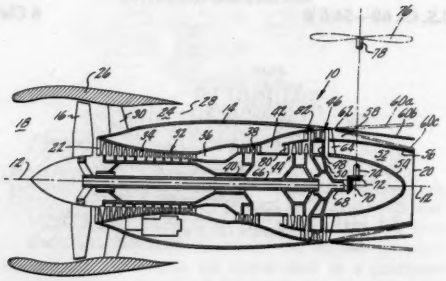
CONVERTIBLE COMPOSITE ENGINE

Herbert N. Shohet, Norwalk; Joseph L. Magri, and Edward R. Primachuk, both of Shelton, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 10, 1970, Ser. No. 53,713

Int. Cl. F02c 7/02

U.S. Cl. 60—226 **17 Claims**



A convertible composite engine capable of either shaft horsepower or thrust generation and split-powered operation in which partial thrust and partial shaft horsepower is generated. The engine is concentric about a single centerline and includes two coaxial free turbines, one driving a load such as bypass fan and the other a shaft horsepower take-off, such as is commonly used to drive a helicopter rotor drive shaft. A single gas generator provides compressed and heated gases to the coaxial free turbines with the total amount of gases provided determined by the total power required from the two free turbines and the split of gas flow through each free turbine determined by the position of the variable inlet guide vanes at the inlet to each turbine.

3,678,691

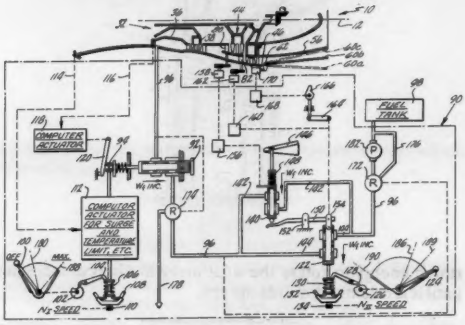
CONVERTIBLE COMPOSITE ENGINE CONTROL

Herbert N. Shohet, Norwalk, and Joseph L. Magri, Shelton, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 10, 1970, Ser. No. 53,721

Int. Cl. F02k 1/18

U.S. Cl. 60—239 **17 Claims**



A control for a convertible composite engine having variable area inlet free turbines driven by a gas generator so that the composite engine is capable of powering a vehicle, such as a flight vehicle, in more than one mode of operation. The control includes provisions for regulating fuel flow to the gas generator in response to the requirements of one of the free turbines and to position the variable geometry inlet thereto in response to fuel flow and also includes provisions for simultaneously regulating fuel flow to the gas generator in response to the power requirements of the other free turbine and varying the area of the variable geometry inlet thereto in response to fuel flow, and still further includes apparatus for positioning a variable area exhaust nozzle operatively associated with one of the free turbines.

3,678,692

PULSATION POWER UNIT

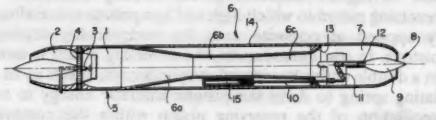
Georg Heise, Allingen, Germany, assignor to Dornier A.G., Friedrichshafen/Badensee, Germany

Filed Sept. 14, 1970, Ser. No. 72,046

Claims priority, application Germany, Dec. 22, 1969, P 19 64 226.3

Int. Cl. F02k 7/04

U.S. Cl. 60—247 **8 Claims**

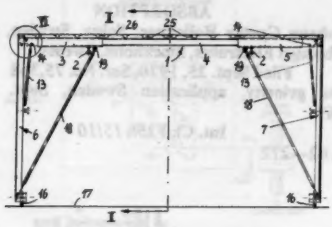


This invention relates to an improvement in a pulsation power unit comprising an inlet, valve means, injection means, a combustion chamber and a combustion cowl, the improvement comprising additional cowl means of larger diameter at the end of the combustion cowl, said additional cowl means having a variable gas outlet cross-section.

3,678,693
TUNNEL FORMWORK

Wolfgang Markewitz, Hilden, and Dieter Bolduan, Lintorf, both of Germany, assignors to Hunnebeck GmbH, Dusseldorf, Postfach, Germany

Filed June 2, 1970, Ser. No. 42,670
Claims priority, application Germany, June 3, 1969, P 19 28 196.0
Int. Cl. E21d 15/14
U.S. Cl. 61—45 C 14 Claims

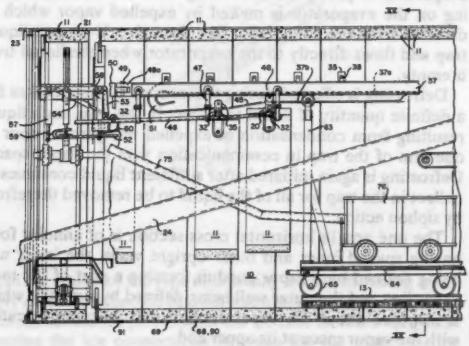


A tunnel formwork of the type comprising a horizontal formwork portion and two vertical formwork portions both of which are resistant to bending. The vertical formwork portions are movable relative to the horizontal formwork portion. Each vertical formwork portion is connected to the horizontal portion by guides. At least two guides are arranged in the area of the junction points between adjacent formwork portions, and at least two guides connect the lower region of the vertical formwork portions with the central area of the horizontal portion. The formwork portions are so designed as to be secured in at least one position.

3,678,694
METHODS AND APPARATUS FOR INSTALLING TUNNEL LINERS

John C. Haspert, Arcadia, Calif., assignor to Commercial Shearing & Stamping Company

Filed July 10, 1970, Ser. No. 53,818
Int. Cl. E01g 5/00
U.S. Cl. 61—84 14 Claims

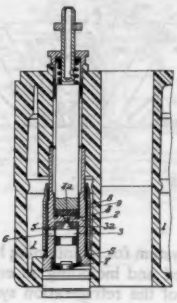


A tunnel lining apparatus and method for installing tunnel liner segments behind a tunnel boring machine having a trailing tail shield is provided in which tunnel liner segments are delivered on a haulage car to a transfer point and transferred to a mobile rail which moves forward into the tunnel as the tunnel boring machine advances and delivers liner segments to a support erector machine within the tail shield which support erector machine pulls the segments into place to form an annular ring and then pushes the completed ring into position as a part of the completed liner after which grout is pumped behind the completed ring.

3,678,695
FUEL RESERVOIRS, ESPECIALLY FOR GAS-LIGHTERS

Jacques Lambert, Paris, France, assignor to Flaminaire Marcel Quercia, Paris, France

Filed Dec. 1, 1970, Ser. No. 94,031
Claims priority, application France, Dec. 2, 1969, 6941532
Int. Cl. F17c 7/02
U.S. Cl. 62—50 8 Claims

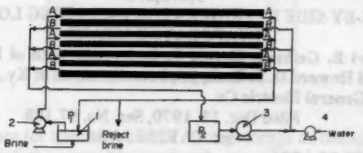


The fuel reservoir in which the fuel is stored in its liquid phase comprises a regulating device for the flow-rate of the fuel. The supply of liquid fuel to the regulating device occurs through an absorbent tube. The device is especially useful for gas-lighters.

3,678,696
FRACTIONAL SOLIDIFICATION PROCESS WITH HEAT REUSE BY THE APPLICATION OF PRESSURE

Chen Yen Cheng, 2443 So. Kramerig St., Denver, Colo., and Sing-Wang Cheng, No. 83, Chang-An E. Rd. Section 1, Taipei, Formosa, China /Taiwan

Filed March 11, 1968, Ser. No. 712,297
Int. Cl. B01d 9/00
U.S. Cl. 62—58 10 Claims



A fractional solidification process for separating relatively pure water from an aqueous solution, separating a solution into its components and purifying an impure substance by the so-called progressive freezing operation in which a feed solution is circulated through a conduit and is cooled through the conducting surface of the conduit. The improvement comprises of the followings:

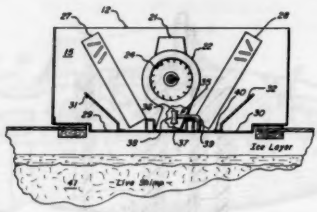
1. Heat reuse is achieved by taking advantage of the change of melting point of a substance due to the application of pressure.
2. A unified freezer-melter which contains two sets of conduits, A-conduits and B-conduits, is used. A-conduits and B-conduits are in heat exchange relation through a metallic conductor and each set of these conduits are used alternately as a freezer and a melter. For separation of water, a high pressure is applied during the melting operation, and for the separation of other substances, a high pressure is applied during the freezing operation to create the temperature difference for heat transfer which is required in the heat reuse.

3,678,697

REFRIGERATION AND COOLING DEVICE FOR SHRIMP BOATS

Charles Merton Anderson, Mankato, Mich., assignor to Year-A-Round Cab Corp., Mankato, Mich.

Filed Nov. 16, 1970, Ser. No. 89,749
Int. Cl. F25d *23/06*
U.S. Cl. 62—274 **4 Claims**



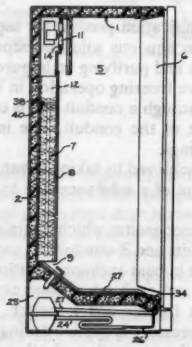
A refrigeration system for maintaining high humidity within a zone being cooled and including an enclosure which confines components of the refrigeration system, the enclosure having an inlet port and an outlet port communicating with the zone being cooled. Compressor means are provided having a supply of refrigerant along with means for receiving and delivering said supply of refrigerant into said system at an increased pressure. Evaporator means are confined within said enclosure and disposed between said inlet and outlet ports and communicating with said zone being cooled, with blower means being disposed adjacent the evaporator for circulating air through said zone being cooled. Receptacle means are disposed adjacent the evaporator for receiving and retaining condensate from said evaporator and venturi means are disposed within the flow of air from said evaporator, with the venturi having an inlet nozzle and an outlet nozzle and a throat, with a conduit communicating between said receptacle and said throat for drawing condensate from said receptacle and discharging said condensate into the air flow through said outlet nozzle at a point adjacent said outlet port.

3,678,698

SIDE-BY-SIDE REFRIGERATOR INCLUDING LOW COST EVAPORATOR MEANS

Robert B. Gelbard; Gerald F. Dodge, III, both of Louisville, and Howard D. F. True, Jr., Fern Creek, all of Ky., assignors to General Electric Co.

Filed Dec. 11, 1970, Ser. No. 97,108
Int. Cl. F25d *21/06*
U.S. Cl. 62—276 **3 Claims**



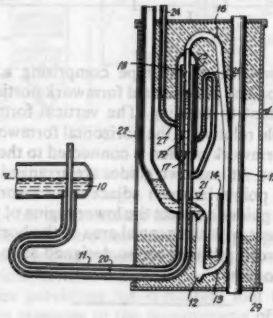
A side-by-side combination refrigerator containing a liner defining a freezer compartment and a low cost vertically extending evaporator mounted on the rear wall of the freezer compartment. The evaporator is a single bank serpentine tube having horizontally extending fins and is folded so that adjacent return bends contact one another, these return bends being held in contact by a tie wire. Low costs means are provided for supporting the evaporator, a cover plate separating the evaporator from the storage portion of the freezer compartment and a radiant heater defrost means on the liner walls.

3,678,699

ABSORPTION

Hans Johann Gustav Holleitner, Solna, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Sept. 25, 1970, Ser. No. 75,368
Claims priority, application Sweden, Sept. 29, 1969, 13401/69
Int. Cl. F25b *15/10*
U.S. Cl. 62—277 **4 Claims**



In an absorption refrigeration system employing an inert gas, refrigerant vapor expelled from solution in a generator normally is conducted from the vapor space of the generator through a main vapor line to a condenser in which the vapor is liquefied and from which liquid refrigerant is conducted to an evaporator to produce useful refrigeration. Frost accumulating on the evaporator is melted by expelled vapor which is diverted from the main vapor line through a U-shaped liquid trap and flows directly to the evaporator when the liquid trap is empty.

Defrosting is effected during the interval of time it takes for a definite quantity of liquid to collect in the trap, such liquid resulting from condensation of expelled refrigerant vapor in one arm of the trap in communication with the vapor space. Defrosting is again initiated after sufficient liquid continues to collect in the trap for all of the liquid to be removed therefrom by siphon action.

The one arm in horizontal cross-section is of annular form having spaced inner and outer upright walls, the inner wall being defined by a vapor conduit forming a part of the main vapor line and the outer wall being defined by a mantle which is disposed about the vapor conduit and in communication with the vapor space at its upper end.

3,678,700

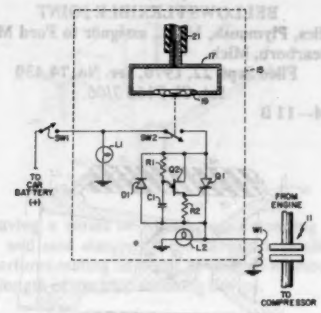
COMPRESSOR CLUTCH WITH TIME DELAY CONTROL

Robert A. Bozich, 356 Winchester St., Newton Highlands, Mass.

Continuation-in-part of Ser. No. 868,473, Oct. 22, 1969, abandoned. This application Feb. 16, 1971, Ser. No. 115,415
Int. Cl. F25b *27/00*
U.S. Cl. 62—323 **2 Claims**

Apparatus is disclosed which automatically disengages a secondary load on an automobile engine, e.g. an air-conditioner compressor, during periods of full throttle operation by

deenergizing an electromagnetic clutch in response to a drop in intake manifold vacuum below a predetermined level.

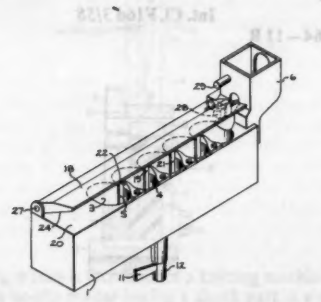


Switching hysteresis and a delay upon re-energization are employed to prevent rapidly repeated operation.

3,678,701
ICE MAKER

John M. Powell, Charlestown, Ind., and Lauren L. Frazier, Louisville, Ky., assignors to General Electric Company

Filed Dec. 16, 1970, Ser. No. 98,635
Int. Cl. F25c *1/04*
U.S. Cl. 62—353 7 Claims



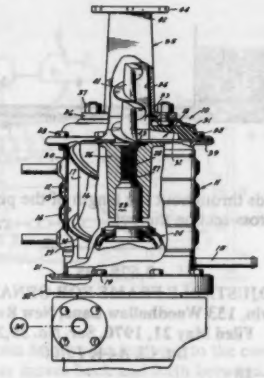
An ice maker of the type comprising a mold including a plurality of interconnected cavities and ejecting means for raising interconnected ice pieces from the cavities includes means for severing the ice connections between the ice pieces during ejection thereof.

3,678,702
NOZZLE CONSTRUCTION FOR ICE MAKER

Phillip H. Turner, Inver Grove Heights, and John B. Lyman, Bloomington, both of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 22, 1970, Ser. No. 39,776
Int. Cl. F25c *1/14*
U.S. Cl. 62—354 7 Claims

A nozzle construction for an ice maker provides a restricted passageway to compact particulated ice product into a solidified columnar-shaped extrudate and is particularly characterized by a liner made of material having a low thermal

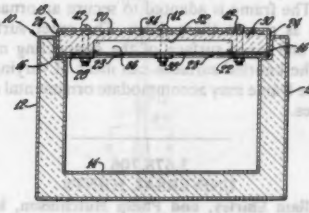


conductivity, thereby to provide a surface which improves the lubricity relative to the ice product moving therethrough.

3,678,703
COLD STORAGE CARTON

Edward Cornish, and Harold R. Liebherr, both of Maumee, Ohio, assignors to Cornish Containers, Inc.

Filed July 20, 1970, Ser. No. 56,327
Int. Cl. F25d *3/08*
U.S. Cl. 62—371 9 Claims



Container for holding material during storage or transportation in which the separable, insulated cover contains a body of heat-absorbing substance thermally exposed to the interior of the container through a heat-conducting inside face of the cover, the cover being capable of being formed from a single piece of fiberboard or other sheet material.

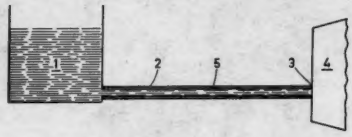
3,678,704
DEVICE FOR TRANSPORTING THERMAL ENERGY AT TEMPERATURES LYING BELOW THE λ-TEMPERATURE OF HELIUM

Frans Adrianus Staas, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 13, 1970, Ser. No. 80,407
Claims priority, application Netherlands, Oct. 16, 1969, 6915652
Int. Cl. F25b *19/00*
U.S. Cl. 62—514 2 Claims

A device for transporting thermal energy at temperatures lying below the λ -temperature of helium between a cooled ^4He container having a temperature lower than that of the λ -point and a place to be cooled or a further container; the device comprises a pipe which has one end in communication with said container and the other end which is brought in ther-

mal contact with the article to be cooled or debouches in the further container, the pipe comprising a sintered superleak

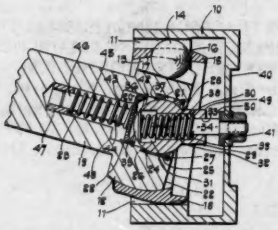


which extends throughout the length of the pipe and covers a part of the cross-section thereof.

3,678,705
ADJUSTABLE FRAME FOR ORNAMENT
Irving Korwin, 153 Woodhollow Lane, New Rochelle, N.Y.
Filed May 21, 1970, Ser. No. 39,263
Int. Cl. A44c *15/00*
U.S. Cl. 63—18 **2 Claims**

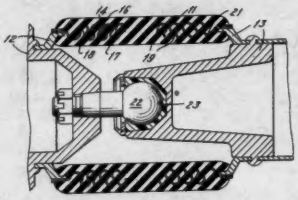
An article of jewelry in which a resilient frame has disconnected ends and has a connecting member secured to one such end. The frame is adapted to secure an ornamental element such as a coin therewithin. The outer surface of the other end and inner surface of the connecting member are knurled. The knurled surfaces can mesh at varying positions, whereby the frame may accommodate ornamental elements of various sizes.

3,678,706
UNIVERSAL JOINTS
Brian William Shirley, and Philip Hutchinson, both of Birmingham, England, assignors to G.K.N. Birfield Transmissions Limited, Birmingham, England
Filed Nov. 20, 1970, Ser. No. 91,561
Claims priority, application Great Britain, Nov. 20, 1969, 56,739/69
Int. Cl. F16d *3/20*
U.S. Cl. 64—7 **8 Claims**



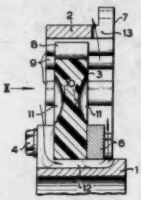
In a plunging constant velocity universal joint the inner member is formed with a bore containing bearing means having bearing surfaces centered on the joint center, a location member is contained in the bore and has a part-spherical outer surface engaging the bearing means. Resilient means or travel limiting means act between the location member and the outer member of the joint.

3,678,707
BELLOWS FLEXIBLE JOINT
George Ulics, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Sept. 22, 1970, Ser. No. 74,430
Int. Cl. F16d *3/06*
U.S. Cl. 64—11 B **7 Claims**



A flexible joint for transferring torque including a generally cylindrical metal bellows member interconnecting a pair of rotatable end members. The cross sectional shapes of the convolutions comprise circular arcs; each convolution adjoins the adjacent convolution at a point of inflection.

3,678,708
FLEXIBLE COUPLINGS
Lothar Ernst, Unna, and Werner Ruggen, Holzwickede, both of Germany, assignors to Maschinenfabrik Stromag G.m.b.H., Unna, Germany
Filed April 22, 1971, Ser. No. 117,678
Claims priority, application Germany, April 24, 1970, P 20 20 179.0
Int. Cl. F16d *3/58*
U.S. Cl. 64—11 R **25 Claims**

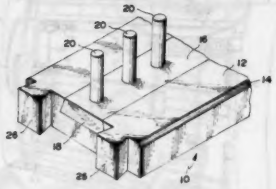


A flexible coupling including a first coupling member, a second coupling member and a flexible torque-transmitting member for transmitting torques from one of the coupling members to the other. The flexible torque-transmitting member is provided with impeller-like surface elements to establish a flow of ambient air cooling the coupling when rotating.

3,678,709
LOOP STITCHING DEVICE OF RIGID STANDARD LENGTH, OR ADJUSTABLE LENGTH, SLIDABLY MOUNTED IN STANDARD BASE
Carmen D. T. Nowicki, 3118 Dakota, N.E., Albuquerque, N. Mex., and Maurine P. Grammer, 1508 Ridgecrest Dr. S.E., Albuquerque, N. Mex.
Filed March 11, 1970, Ser. No. 18,580
Int. Cl. D04b *5/00, 3/00*
U.S. Cl. 66—4 **1 Claim**

A knitting device for therapeutic, teaching or recreational purposes in which pegs are mounted on a standard rigid base,

or on a slidable member engaging a standard base, the rigid base having a series of round pegs extending upwardly therefrom with ends finished at right angles, or the slidable



member having a series of round pegs extending upwardly therefrom, and said standard base having dovetailed extensions or apertures mating adjacent dovetailed members for adjusting the length of the loop stitching device.

3,678,710

NEEDLE OPERATING MEANS IN KNITTING MACHINES

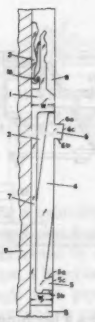
Daniel William Fredrick Gostelow, Luton, England, assignor to The Bentley Machine Development Company Limited, Leicester, England

Filed Feb. 17, 1970, Ser. No. 12,032

Claims priority, application Great Britain, Feb. 25, 1969, 10,028/69

Int. Cl. D04b 9/10, 15/68

U.S. Cl. 66—14 **2 Claims**



Controlling means is provided for a knitting machine needle comprising a needle holder having a shank part in a recess in which there is positioned a rockable element provided with an operating butt displaced from its fulcrum, said element engaging the shank part for two-way transmission of movements to it and so arranged that its rocking movements bring its operating butt into and out of active position.

3,678,711

GUIDE BAR SHOGGING MECHANISM FOR A WARP KNITTING MACHINE

Harald Schneider, and Cornel Wicha, both of Augsburg, Germany, assignors to Karl Mayer Textilmaschinenfabrik GMBH, Obertshausen Offenbach, Germany

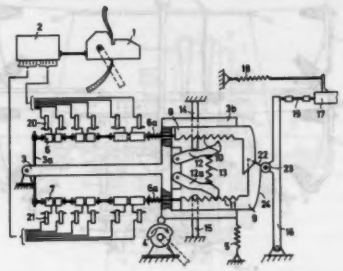
Filed Jan. 15, 1971, Ser. No. 106,661

Claims priority, application Germany, Jan. 21, 1970, P 20 02 5.687

Int. Cl. D04b 23/00, 27/00

U.S. Cl. 66—86 **10 Claims**

The guide bars of a warp knitting machine are moved longitudinally in response to stored information scanned by a programming device and converted to electrical control signals. A cam follower linked with each guide bar is engaged alternatively by two cams which are moved in a direction toward and



away from the cam follower in response to the control signals. The cam follower moves back and forth between the faces of the two cams in synchronization with the main machine drive.

3,678,712

COMBINED CROCHETING AND LOOPING NEEDLE

Richard L. Singleton, Wichita, Kans., assignor to Loopco, Wichita, Kans.

Filed April 8, 1970, Ser. No. 26,690

Int. Cl. D04b 3/02

U.S. Cl. 66—118 **4 Claims**

A sewing needle having an eye at one end and a crochet hook at the other end. Yarn is passed through the eye which serves its customary function during the making of loops and which serves as a yarn guide and yarn feed control during the making of crochet stitches. The relationship of the hook and the eye is such that the needle can be used to form successively loop and crochet stitches and vice versa. The needle is also provided with an annular stop means for limiting the size of loop formation, such stop means being frictionally adjustable on the needle in its spacing from the eye.

3,678,713

CREEL STRUCTURE FOR CIRCULAR KNITTING MACHINES

Terrence R. Woodford, Aiken, S.C., assignor to Institute of Textile Technology, Charlottesville, Va.

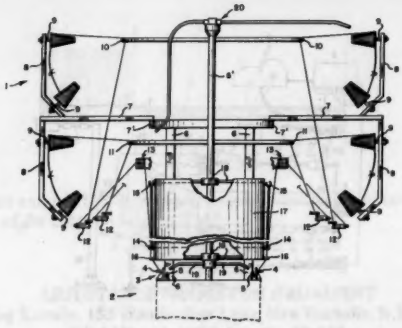
Filed July 29, 1969, Ser. No. 845,713

Int. Cl. D04b 15/40, 15/48, 35/14

U.S. Cl. 66—132 R **9 Claims**

A circular knitting machine having an improved creel with the various thread receiving and dispensing elements arranged

to minimize detrimental lint and fly accumulation. The creel includes a plurality of brackets adapted to support supply



cones of yarn at an angle to the vertical and at a position laterally outwardly of the main knitting area of the machine.

3,678,714

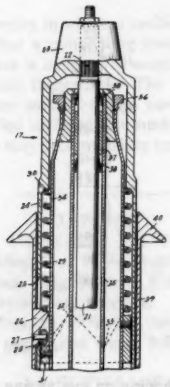
AGITATOR WITH RECIPROCATING DEVICE

Gordon J. Krolzick, Benton Harbor, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Feb. 23, 1971, Ser. No. 118,125

Int. Cl. D06f

U.S. Cl. 68—131 **7 Claims**



A washing machine assembly of the vertical axis type, including an agitator assembly which oscillates about a stationary vertical axis, in combination with a second agitator which is coupled to the main agitator for oscillation therewith, together with means operating between the main agitator and the other agitator to effect a vertical reciprocation of the latter during oscillation.

3,678,715

DOOR CONSTRUCTION FOR WASHER-EXTRACTOR DRUM

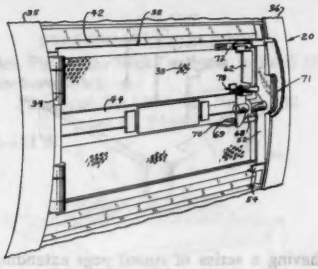
Stanley T. Funk, Cincinnati, Ohio, assignor to McGraw-Edison Company, Elgin, Ill.

Filed June 10, 1971, Ser. No. 151,650

Int. Cl. D06f 39/14

U.S. Cl. 68—143 **12 Claims**

A door construction for a rotatable drum of a washer-extractor type machine, where the door is hinged to the circumferential drum wall and is aligned when closed with the drum wall, a full width locking blade is carried on the door and is



adapted to be moved to underlie the drum wall to hold the door closed, and a camming handle is carried on the door for moving the locking blade.

3,678,716

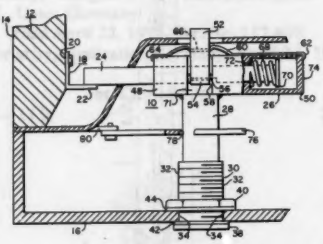
LATCH MECHANISM FOR REFRIGERATORS FREEZERS AND THE LIKE

William R. Cobb, Galloway, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 11, 1971, Ser. No. 123,307

Int. Cl. E05b 65/10, 65/52

U.S. Cl. 70—92 **9 Claims**



The invention provides a latching mechanism intimately associated with a locking body so that the movement of the latching mechanism in a swinging direction as actuated by unlocking of the locking body by a key permits opening of a freezer or refrigerator door, while a release is also provided for the latching mechanism which is available within the refrigerator or freezer that causes sliding, telescoping movement of the latch bolt to permit opening of the refrigerator or freezer door from interiorly of the compartment thereof.

3,678,717

COUPLING GUARD DEVICE

Randell C. Eaton, 4 Virginia Lane, Westport, Conn.

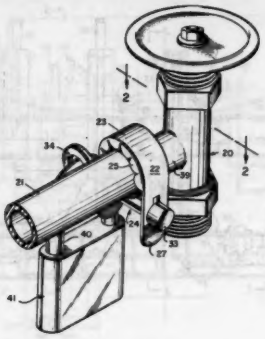
Filed Nov. 27, 1970, Ser. No. 93,007

Int. Cl. E05b 73/00; F16l 35/00

U.S. Cl. 70—232 **5 Claims**

A coupling guard device for substantially enclosing and retaining a conventional hose coupling or the like and capable of being locked in such enclosing and retaining relation to prevent unauthorized tampering with or disengagement of the coupling. In one embodiment, the guard comprises a flanged U-shaped guard member having slots in its side legs arranged to allow a retaining member to be engaged and locked in the engaged position by an ordinary padlock thus permitting disconnection of the coupling only by authorized persons pro-

vided with the padlock key. In another embodiment, the flanged guard member is engaged upon the U-shaped shackle



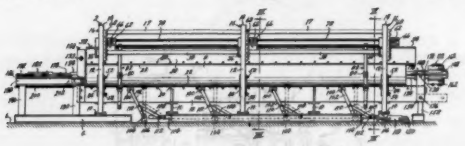
of a padlock so the body of the lock serves as the retaining member.

3,678,718

PIPE PERFORATING MACHINE

William A. Brown, 2021 Hart St., and Eugene P. Earnest, 203½ W. Wyatt Earp Bldg., both of Dodge City, Kans.

Filed Dec. 4, 1970, Ser. No. 95,254
Int. Cl. B21d *31/02*; B23b *3/06*,
U.S. Cl. 72—71 17 Claims



A machine for perforating a cylindrical pipe consisting of a frame operable to support said pipe between diametrically opposed pairs of shear blades carried by said frame and extending longitudinally of said pipe, a head carried by said frame for powered movement through said pipe parallel to the axis thereof, and a pair of cutter wheels carried rotatably by said head on axes transverse to said pipe and having rolling engagement with the interior of said pipe respectively in alignment with one of said pairs of shear blades, each of said wheels having a series of angularly spaced cutter teeth projecting radially outwardly therefrom by a distance greater than the wall thickness of said pipe, each of said teeth being operable, as said wheel rolls through said pipe, to cooperate with the associated shear blades to cut a pair of short parallel slits longitudinally in the pipe wall, and to offset outwardly the wall section between said slits.

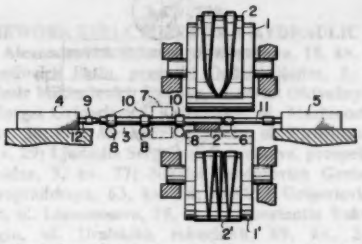
3,678,719

SUPPORT SYSTEM FOR A CROSS-ROLLING MACHINE FOR SHAPING ROD-LIKE WORKPIECES

Hidehiko Tsukamoto, and Nobutaka Maeda, both of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1970, Ser. No. 100,656
Claims priority, application Japan, Dec. 22, 1969, 44/102532
Int. Cl. B21b *19/02*
U.S. Cl. 72—95 5 Claims

A support system for supporting a rod-like workpiece in a cross-rolling machine includes a fluid pressure control piston having a rod member with a rotatable chuck for supporting one end of the rod-like workpiece and a second fluid pressure-controlled piston which has a rod member provides a centering means for holding the opposite end of the workpiece. The



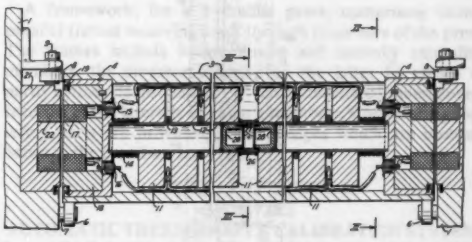
workpiece is shiftable axially with the rod members on rollers and it is centered over the roller by rings which extend around each roller and define a passage therewithin over each roller for the guiding of the workpiece.

3,678,720

ROLLER LEVELER AND METHOD OF LEVELING

Clyde W. Dickey, State College, and Ray A. Bland, Pittsburgh, both of Pa., assignors to Sutton Engineering Company, Pittsburgh, Pa.

Filed Aug. 13, 1970, Ser. No. 63,408
Int. Cl. B21d *1/02*
U.S. Cl. 72—160 10 Claims



In a roller leveler a roll is rotatably supported in a position to be engaged by an elongated workpiece traveling through the leveler. The roll has a hollow cylindrical body, inside of which there are ferroelectric transducers close to its inner surface. These transducers are driven electrically to vibrate the roll body radially in all directions at ultrasonic frequencies to relieve residual stresses in the workpiece passing across the roll.

3,678,721

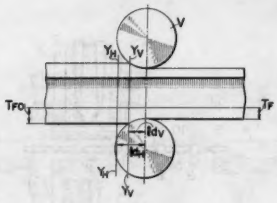
METHOD OF ROLLING SHAPED STEEL MEMBERS HAVING FLANGES

Kanichi Kishikawa; Takeo Kuwata; Kentaro Kinoshita, all of Kitakyushu; Takao Tsuchiya, and Yoshiro Kamogawa, both of Sakai, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 2, 1969, Ser. No. 881,378
Claims priority, application Japan, Dec. 10, 1968, 43/90428
Int. Cl. B21b *13/10*
U.S. Cl. 72—225 1 Claim

A method of rolling shaped steel members having flanges by a universal rolling mill, wherein the biting point of the web of the to-be-rolled material by horizontal rolls of said universal

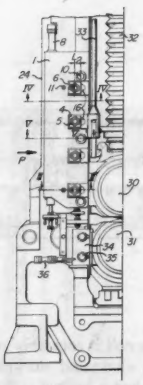
rolling mill precede that of the flange of the material by its vertical rolls, such precedence being adjusted by the ratio between the diameter of the vertical rolls and the horizontal rolls and/or the reduction schedule of each rolling pass.



3,678,722
ROLLING MILL

Tetsuji Taniguchi; Kakichi Fukui; Shiro Imai; Masahiro Hayashi, and Koichi Seki, all of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 12, 1969, Ser. No. 875,635
Claims priority, application Japan, Nov. 13, 1968, 43/82538
Int. Cl. B21b *31/08*
U.S. Cl. 72—238 **5 Claims**



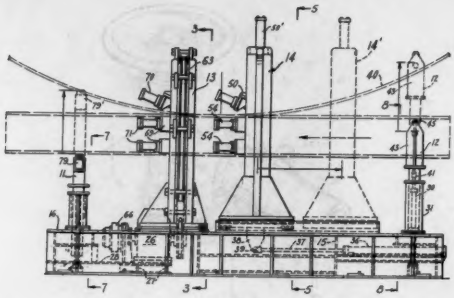
A rolling mill having thrust keeper plates for preventing axial movement of the rolls, said thrust keeper plates being shiftable in the direction perpendicular to the roll axis and said thrust keeper plate being mounted on a roll housing by means of a wedge mechanism whereby the plates can be remotely actuated.

3,678,723
T-BAR TWISTER

Emerson J. Tenpas, Erie, Pa., assignor to Eriez Manufacturing Company, Erie, Pa.

Filed Feb. 12, 1970, Ser. No. 10,819
Int. Cl. B21d *11/14*
U.S. Cl. 72—299 **6 Claims**

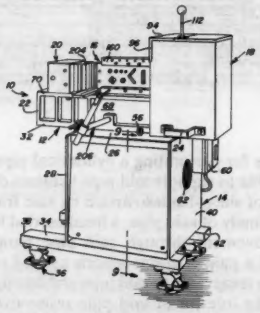
This disclosure shows a machine for bending and/or twisting a beam. The machine has a frame with a guide for the beam at each end. A twisting device in the form of a rotatable drum is supported on the frame and clamped to the beam and a calibrated scale is fixed to the frame to measure the amount of twist. A carriage is movably supported on the machine frame and can be clamped to the beam to advance the beam along the frame and to bend it.



3,678,724
HYDRAULICALLY OPERATED METAL FORMING MACHINE

Guthrie B. Stone, Honeoye, and William F. Holmes, Springwater, both of N.Y., assignors to Springwater Manufacturing Co., Inc.

Filed Jan. 9, 1970, Ser. No. 1,805
Int. Cl. B21d *43/28*; B21k *27/06*; B26d *5/08*
U.S. Cl. 72—324 **20 Claims**



An elongated machine bed pivotally displaceable between vertical and horizontal positions on a movable base. A reciprocable blade is slidably mounted on the bed for advancement toward a die block adjustably positioned on the bed for punching and bending operations. A fixed blade in sliding contact with the moving blade is utilized for shearing operations.

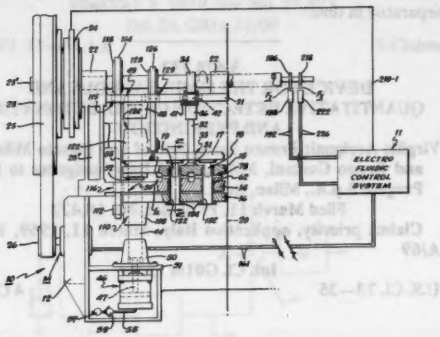
3,678,725
CONTAINER FORMING APPARATUS

Cornelis Langewis, Walnut Creek, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Oct. 19, 1970, Ser. No. 81,854
Int. Cl. B21d *45/00*
U.S. Cl. 72—344 **13 Claims**

Container forming press comprised of a combined punch, drawing die, and stripper means for effecting the formation of and ejection of a container from the press during a full cycling of the same. The press further includes an improved elec-

trofluidic control system connected to the punch and drawing die means which operates to detect malformed containers and



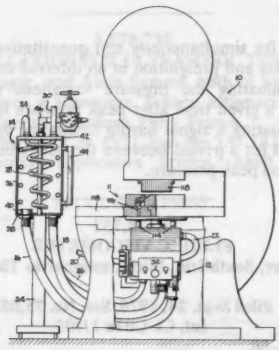
to stop the apparatus so that the malformed containers can be removed.

3,678,726

HYDRAULIC SYSTEM

Bernard L. Hoffman, Trenton, N.J., assignor to Fredrick A. Krause Associates, Inc., Frenchtown, N.J.

Filed April 1, 1970, Ser. No. 24,567
Int. Cl. B21d *29/14*
U.S. Cl. 72—351 **4 Claims**



This invention relates to a hydraulic system characterized by a combination pressure and utilization means unit assembly, and a dual low pressure hydraulic piping system between the pressure unit and a hydraulic fluid reservoir, thereby providing continuous circulation of hydraulic fluid during operation.

3,678,727

STRETCH-DRAW TUBING PROCESS

Robert G. Jackson, 11020 Dunklin Drive, Apt. 312, St. Louis, Mo.

Filed Aug. 27, 1970, Ser. No. 67,476
Int. Cl. B21c *37/06*
U.S. Cl. 72—367 **5 Claims**

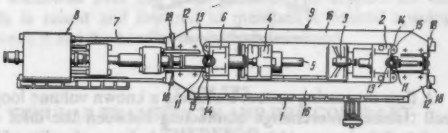
Metallic tubing is drawn under tri-axial stress. A tube which has the capability of cold work is used as a starting material. The tube is stretched longitudinally under cold working conditions without restraint against reduction in diameter and in cross section into the plastic range but below the point of necking to reduce its diameter. Then the tube is drawn with tools which subject it to force inwardly on two axes at right angles to the longitudinal axis and at right angles to one another under cold working conditions into the plastic range. The cold worked condition of the tube is retained during the stretching and drawing.

3,678,728

FRAMEWORK STRUCTURE FOR A HYDRAULIC PRESS

Leonid Alexandrovich Efimov, ul. Khmeleva, 18, kv. 77; Lev Mikhailovich Shtin, prospekt Ordzhonikidze, 3, kv. 49; Vladimir Mikhailovich Sinitsky, ul. 40 let Oktyabrya, 9, kv. 39; Sergei Grigorievich Khirdzhiev, ul. Mashinostroitelei, 51, kv. 38; Petr Alexeevich Pylaikin, ul. Kirovogradskaya, 79, kv. 29; Ljudmila Sergeevna Satovskaya, prospekt Ordzhonikidze, 3, kv. 77; Nikolai Feodosovich Grebnev, ul. Kirovogradskaya, 63, kv. 18; Mikhail Grigorievich Rasseikin, ul. Lomonosova, 19, kv. 7; Konstantin Yakovlevich Kalugin, ul. Uralskikh rabochikh, 69, kv. 2; Boris Stepanovich Somov, ul. Krasnykh partizan, 3, kv. 22, all of Sverdlovsk, and Valdimir Mikhailovich Baranchikov, ul. Oktyabrskaya, 12, kv. 48, Kamensk Uralsky, Sverdlovskaya abl., all of U.S.S.R.

Filed Sept. 12, 1969, Ser. No. 857,361
Int. Cl. B21j *9/02*
U.S. Cl. 72—455 **6 Claims**



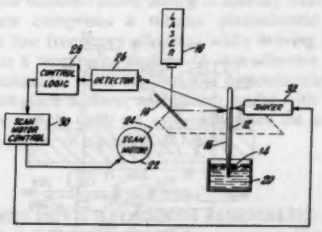
A framework, for a hydraulic press, comprising closed parallel frames receiving loads through cross bars of the press. The frames include longitudinally and laterally extending members, the crossbars bearing on the latter by means of partly cylindrical projections which mate with complementary recesses in the laterally extending members. Cooperating centering parts are provided as are wedges which are inserted between the crossbars and frame.

3,678,729

AUTOMATIC THERMOMETER CALIBRATION SYSTEM

James D. Geis, Cheshire; John H. Troll, Ridgefield; Harry Gluz, South Norwalk, and Cole H. Baker, Stratford, all of Conn., assignors to Iris Corporation, Hamden, Conn.

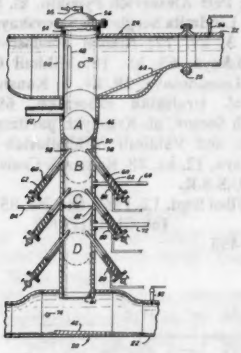
Filed Aug. 3, 1970, Ser. No. 60,596
Int. Cl. G01k *19/00*
U.S. Cl. 73—1 F **13 Claims**



A system for automatically calibrating and classifying measuring instruments such as mercury clinical thermometers, by accurately determining the distance between two reference points established by two known reference parameters. The detection of the reference points is made by scanning a laser

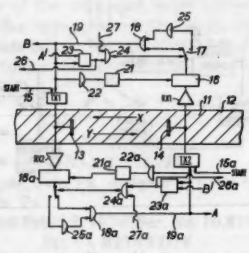
beam over the mercury column and detecting the change in the reflection characteristic of the beam at the upper level of the column.

3,678,730
METER PROVING SYSTEM
Maurice L. Barrett, Jr., 5514 Airline Drive, Houston, Tex.
Filed July 9, 1970, Ser. No. 53,543
Int. Cl. G01f 25/00
U.S. Cl. 73—3 23 Claims



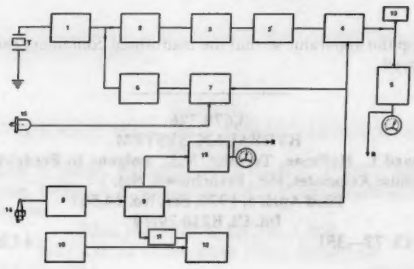
A flow measuring system including a known volume loop, a ball transfer interchange connecting between the inlet and outlet of the loop, said interchange including a plurality of ball stations and means for establishing pressure differentials on balls in said interchange to positively move balls through said interchange. A method of transferring balls from the outlet of a power loop to the inlet of the power loop by establishing pressure differentials between opposite sides of the ball to be moved while supporting another ball in the interchange to maintain such pressure differential.

3,678,731
APPARATUS FOR MEASURING THE FLOW VELOCITY OF FLUIDS
Frank Herbert Wells, Abingdon, England, and Cyril Norman Davey, deceased, late of Newbury, England (by Catherine Margaret Davey, administratrix), assignors to United Kingdom Atomic Energy Authority, London, England
Filed Sept. 29, 1967, Ser. No. 870,377
Claims priority, application Great Britain, Oct. 4, 1968, 47,310/68
Int. Cl. G01p 5/00
U.S. Cl. 73—194 A 6 Claims



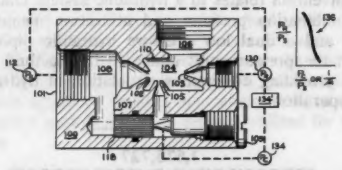
The apparatus comprises two ultrasonic transducers spaced apart and arranged in the line of flow to be measured. The transducers are connected to act as both transmitters and receivers. The time of travel of a pulse of ultrasound in the direction of flow is compared with the time of travel of a pulse of ultrasound in the reverse direction. The fluid paths traversed are thus identical, but the pulses are slightly separated in time.

3,678,732
DEVICE FOR THE SIMULTANEOUS AND QUANTITATIVE DETECTION OF THE DETONATION AND PREIGNITION
Virgilio Arrigoni; Franco Sezzi, both of San Donato Milanese, and Bruno Gaetani, Milan, all of Italy, assignors to Snam Progetti S.p.A., Milan, Italy
Filed March 11, 1970, Ser. No. 18,422
Claims priority, application Italy, March 11, 1969, 13915 A/69
Int. Cl. G01m 15/00
U.S. Cl. 73—35 4 Claims



A system for simultaneously and quantitatively measuring the detonation and preignition in an internal combustion engine by evaluating the pressure variations in an engine cylinder for a given time after peak pressure in the cylinder and by evaluating a signal having frequency proportional to engine speed for a period between the occurrence of an ignition signal and peak pressure.

3,678,733
FLUIDIC VISCOMETER
Albert Blatter, Southfield, Mich., assignor to The Bendix Corporation
Filed Sept. 24, 1970, Ser. No. 75,058
Int. Cl. G01n 11/00
U.S. Cl. 73—54 5 Claims



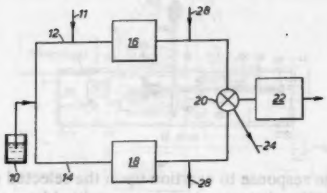
A fluidic viscometer is disclosed herein which includes a proportional fluidic amplifier and associated circuit means operative to provide an output pressure signal related to the viscosity of the fluid passing through the fluidic device. Fluidic from a pressure source enters a pressure port in the device and also, after passage through a laminar resistor, a control port whence it interacts with the pressure port stream. The pressure recovered from the combined stream is then related to the supply pressure or control pressure to indicate the viscosity of the fluid.

3,678,734

ANALYSIS OF FLUIDS

Douglas Mitchell, Tarrytown, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Oct. 1, 1970, Ser. No. 77,073
Int. Cl. G01n *11/00*
U.S. Cl. 73—61.1 R 9 Claims



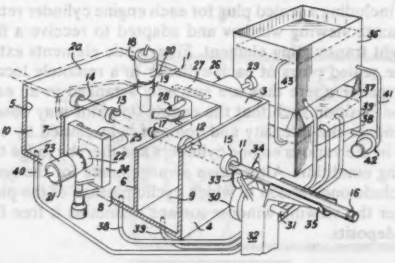
Automatic apparatus is described for the analysis of two or more constituents of interest present in widely varying concentrations in liquid samples by a common analytical device or detector selective with respect to such constituents. The liquid samples are directed successively along the apparatus as in initial stream, which is divided into two or more streams. The two or more streams are differentially diluted and reacted, so as to be accommodated by the common detector, prior to being passed alternatively and in succession to the common detector.

3,678,735

INSTALLATION FOR ULTRASONIC TESTING

Gilbert Boulanger, and Alain Samoel, both of Les Lavandes, rue Leon Mure, 4 Manosque, France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed April 26, 1971, Ser. No. 137,182
Claims priority, application France, April 30, 1970, 7016042
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.7 8 Claims



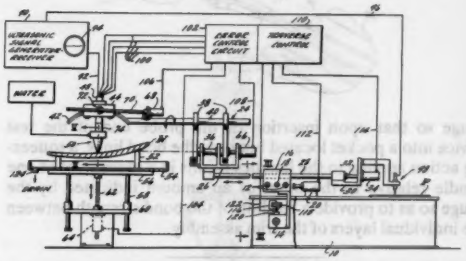
The installation comprises an unsealed measuring vessel in which the level of water employed for ultrasonic energy transmission is maintained constant by a supply system which prevents air bubbles and turbulence within the vessel. The supply system comprises a constant-level supply tank and a leakage-retention tank connected to each other by means of two pipes respectively for overflow and for continuous discharge through a pump. A mechanism is provided for displacing elements to be tested within the vessel.

3,678,736

MACHINE WITH IMPROVED OPERATING HEAD TRAVERSING WORKPIECES WITH CURVED SURFACES

Harley E. May, Cincinnati, Ohio, assignor to General Electric Company

Filed Aug. 3, 1970, Ser. No. 60,690
Int. Cl. G01n *24/00*
U.S. Cl. 73—67.8 S 10 Claims



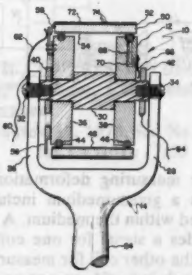
An ultrasonic inspection machine is disclosed. The ultrasonic transducer is mounted in an operating head which is pivoted in two planes to maintain it perpendicular to the surface of a cambered blade as the head is traversed lengthwise and widthwise over the blade surface. The support for the blade is raised and lowered to maintain a desired spacing between it and the head as the latter is traversed.

3,678,737

TUBULAR TRANSDUCER AND DRY COUPLANT THEREFOR

Darrow L. Miller, Los Angeles, Calif., assignor to North American Rockwell Corporation

Filed June 12, 1969, Ser. No. 832,568
Int. Cl. G01n *29/00*
U.S. Cl. 73—71.5 5 Claims



A probe for nondestructive testing to identify internal structural defects comprises a tubular piezoelectric element adapted for low frequency vibration while moving in rolling contact over a workpiece surface. A dry adhesive couplant forms a mechanical bond between the piezoelectric element and the workpiece surface, and is also useful with disc-type probes known to the prior art, especially when the adhesive is coated with a layer of minute glass beads.

3,678,738

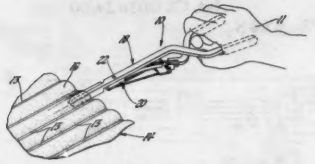
TEST DEVICE FOR TRIM ASSEMBLIES

Warren L. Jubelt, East Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 6, 1970, Ser. No. 61,682
Int. Cl. G01n *3/00*
U.S. Cl. 73—88 B 1 Claim

A hand-operated test device for nondestructively determining the bond strength between individual layers of a fabricated

trim assembly having substantially parallel bond lines formed thereon. The test device includes a pair of overlapping arms pivotally interconnected in a scissors fashion and having each arm formed at one end with a probe section and at the other end with a handle. One arm is provided with a leaf spring and



gauge so that upon insertion of the probe end of the test device into a pocket located between the bond lines, a squeezing action applied to the handles results in a movement of one handle relative to the other of an amount indicated by the gauge so as to provide a reading of the bond strength between the individual layers of the trim assembly.

3,678,739

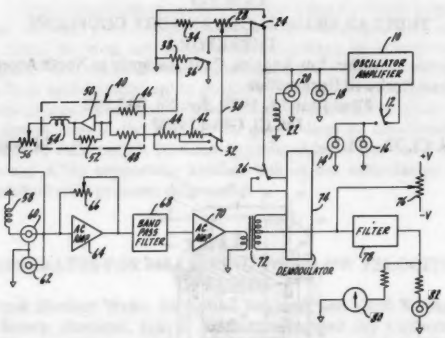
SOIL STRAIN GAGE

Orrin H. Grangaard, Jr., Saint Paul, Minn., and Ernest T. Selig, Williamsville, N.Y., assignors to Bison Instruments, Inc., Minneapolis, Minn.

Filed Oct. 5, 1970, Ser. No. 77,986

Int. Cl. G01b 7/18

U.S. Cl. 73—88.5 R **4 Claims**



An instrument for measuring deformation between two spaced points within a given medium including a pair of spaced coils positioned within the medium. A source of alternating current provides a signal for one coil and there are means connected to the other coil for measuring the induced current or voltage. Such induced current or voltage is compared against a reference, first before a deforming force is applied to the medium to establish a predetermined relationship between the reference signal and the induced signal, and then after or during the period when a deforming force is applied to measure any change in the relationship between the coils which provides an indication of deformation of the medium.

3,678,740

BOOK SHEET TESTING APPARATUS

Adolf Schmid, Wellhausen, and Rudolf Kuhni, Frauenfeld, both of Switzerland, assignors to Martini-Buchbindereimaschinenfabrik AG, Frauenfeld, Switzerland

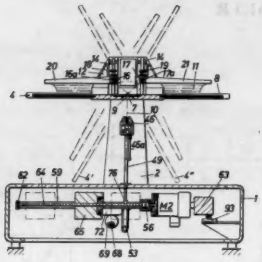
Filed June 4, 1970, Ser. No. 43,383

Claims priority, application Switzerland, July 26, 1969, 11375/69

Int. Cl. G01n 3/32

U.S. Cl. 73—93 **17 Claims**

Apparatus for testing the strength of connections between the rear edges of sheets and the backs of books comprises an oscillatable table which supports a book in open position and has a slot through which the selected sheet extends downwardly to be engaged by a gripper. Dynamic testing takes place in response to oscillation of the table, and static testing



takes place in response to exertion upon the selected sheet of a variable tensional stress which is transmitted by way of the gripper. Both testing operations are terminated in automatic response to extraction of the selected sheet from the back of the book.

3,678,741

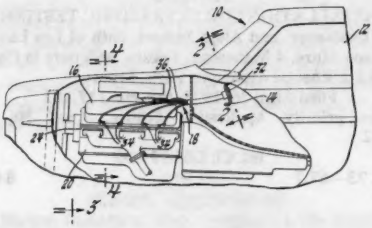
ENGINE COMBUSTION MONITOR

Harvey A. Burley, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed March 24, 1971, Ser. No. 127,447

Int. Cl. G01m 15/00

U.S. Cl. 73—116 **2 Claims**



In a preferred embodiment, a combustion monitor for an engine, including a sealed plug for each engine cylinder retaining a quartz viewing window and adapted to receive a fiber optic light transmitting element. Fiber optic elements extend from the sealed plugs of each cylinder to a remotely located viewing panel where they are spacedly arranged in an easily observed position such that the engine operator may observe and compare the intensity and color of light caused by combustion in the various engine cylinders and thereby judge their operating condition. Alternative arrangements for the sealed plug include one version in which cyclic passage of the piston ring over the viewing window surface maintains it free from engine deposits.

3,678,742

TOLERANCE CHECKING SYSTEM

Vernon C. Westcott, Lincoln; Byron E. Blanchard, Lexington; Paul A. Davis, Cochituate, and Stephane Prevot, Lexington, all of Mass., assignors to Trans-Sonics, Inc., Lexington, Mass.

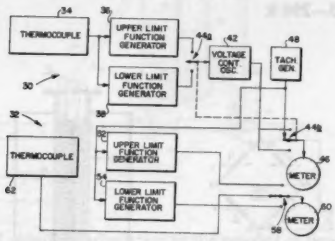
Filed Oct. 5, 1970, Ser. No. 77,864

Int. Cl. G01m 15/00

U.S. Cl. 73—117.3 **11 Claims**

A tolerance checking system enables one to quickly verify whether or not a given primary parameter is within tolerance limits which are functions of one or more other secondary

parameters. The system measures the values of the secondary parameters and uses these as inputs to function generators to generate corresponding upper and lower limit values of the primary parameter. The outputs of the function generators are connected to a meter by way of a three-position switch, with the upper limit output being applied to the meter when the switch is in its upper position and the lower limit output being fed to the meter in the lower switch position. Another sensor which measures the actual value of the primary parameter is



connected to the meter when the switch is in its middle position.

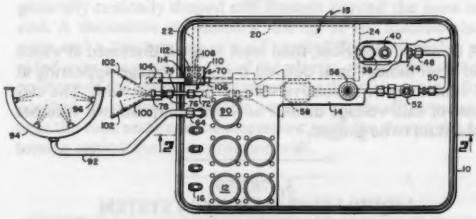
In order to check whether the primary parameter is within the allowable limits, the operator sets the switch in the middle position so that the actual value of the primary parameter is shown in the meter. Then he flips the switch to the upper and lower positions. The directions of movement of the meter pointer when the switch is actuated indicate whether the primary parameter is within tolerance limits.

3,678,743

FIELD TEST UNIT FOR A GAS TURBINE FUEL INJECTION SYSTEM

Neal J. Maresca, San Francisco, Calif., and Orrin J. Winton, Bridgeport, Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Feb. 16, 1971, Ser. No. 115,185
Int. Cl. G01m 15/00
U.S. Cl. 73—119 A **1 Claim**



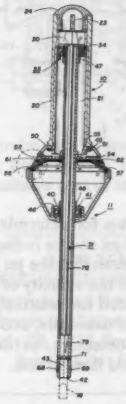
A unit is disclosed for field testing the nozzle manifold and fuel starting nozzles of a gas turbine engine. A portable case has a tank that is filled with fuel and pressurized to a predetermined level. The output of the tank is connected to the engine fuel nozzle manifold to test fuel distribution from the main nozzles. The engine starting nozzles are placed on a protractor nozzle support assembly to determine visually their spray pattern.

3,678,744

TORQUE MEASURING HAND SCREWDRIVER

Raymond J. Blattner, Chicago, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 14, 1969, Ser. No. 876,927
Int. Cl. G01l 5/24
U.S. Cl. 73—139 **7 Claims**



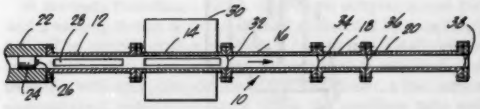
A torque measuring hand screwdriver in which applied torque is transmitted to the drive bit by means of a torque bar extending axially continuous between the gripping handle and bit support. The bar end connections permit an axial floating to accommodate linear contraction concomitantly with twist. A scale gauge calibrated in torque units registers measured twist as applied torque.

3,678,745

BALLISTIC COMPRESSION DECELERATOR

Robert N. Teng, Torrance, Calif., assignor to McDonnell Douglas Corporation

Filed Nov. 12, 1970, Ser. No. 88,879
Int. Cl. G01n 17/00
U.S. Cl. 73—167 **6 Claims**



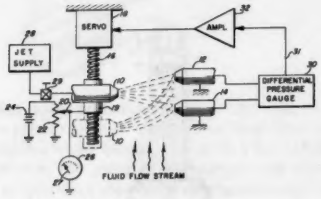
Projectiles are recovered from free-flight for analysis of flight effects on the projectile. Recovery is accomplished by converting kinetic energy into controlled heat of compression which is dissipated in several stages. Shock compression is used during supersonic velocities of the projectile and adiabatic compression is used during sonic and subsonic velocities. Decelerator tubes having diaphragms within them are precharged to high pressure in front of the projectile to minimize the decelerating distance. The final diaphragm may or may not break depending upon the adiabatic pressure buildup.

3,678,746

FLUIDIC SENSOR FOR FLUID STREAM VELOCITY

Victor B. Corey, Bellevue, Wash., assignor to Sundstrand Data Control, Inc.

Filed June 10, 1970, Ser. No. 45,029
Int. Cl. G01f 1/00
U.S. Cl. 73—194 R 17 Claims



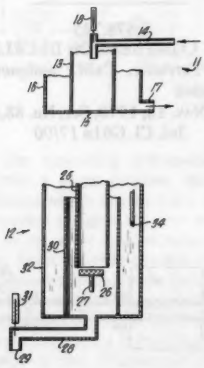
A method and apparatus for determining the velocity of a fluid flow stream. A fluid jet source is disposed opposite a pair of fluid pressure detectors so that the jet stream equally intersects both detectors when the velocity of the fluid flow stream is zero. Means are provided for relatively laterally displacing the jet with respect to the detectors, and for sensing the pressure difference at the detectors, in order to indicate the velocity of the moving fluid flow stream.

3,678,747

APPARATUS AND METHOD FOR MEASURING STEAM AND CONDENSATE FLOWS

John C. Urbas, 3415 Francheville, Quebec 10, Quebec, Canada

Filed April 23, 1971, Ser. No. 136,941
Int. Cl. F16h 15/08
U.S. Cl. 73—194 R 15 Claims



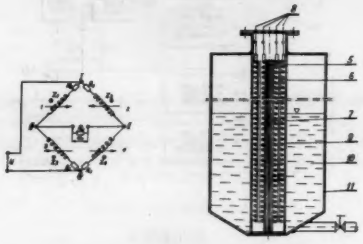
A metering apparatus for measuring steam and condensate flow rate comprising water storing means for supplying a substantially constant flow rate of water at an outlet thereof and a level metering chamber having a mixing chamber therein for receiving the supply of constant flow rate of water. The mixing chamber is provided with adjustable drain means whereby the level of water in the mixing chamber can be adjusted and maintained substantially constant. Means are further provided for introducing steam and condensate in the mixing chamber whereby the steam condensates with the water thereby increasing the water level in the mixing chamber causing overflow in the metering chamber. Indicating means are provided in the metering chamber for measuring the overflow from the mixing chamber whereby the steam and condensate flow rate is measured.

3,678,748

ELECTRICAL SENSING DEVICE FOR MEASUREMENT OF LIQUID METAL

Jan Dziedzic, U1, Pazinskiego 3 C M 5, Warsaw, Poland

Continuation-in-part of Ser. No. 779,776, Nov. 29, 1968, abandoned. This application June 18, 1970, Ser. No. 47,470
Claims priority, application Poland, Dec. 2, 1967, P 123,861
Int. Cl. G01f 23/26
U.S. Cl. 73—290 R 5 Claims



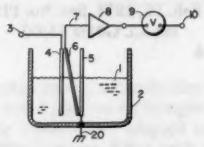
Sensing device for sensing the level of molten liquid in which four legs of a Wheatstone bridge are wound on two concentric tubes, two opposite legs being spirally wound in pairs along the length of each tube; core material within each two leg windings is ferromagnetic or non-magnetic.

3,678,749

FLOATLESS FLUID LEVEL GAUGE

Patrick D. Harper, 901 St. Andrews Way, Bel Air, Md.

Filed Feb. 25, 1970, Ser. No. 14,132
Int. Cl. G01f 23/24
U.S. Cl. 73—304 R 20 Claims



A floatless, electrical, fluid level gauge is disclosed in which fluid level indication is derived from the voltage appearing at the center tap of a resistive voltage divider network. The elements of said voltage divider network comprise two volumes of the fluid to be gauged.

3,678,750

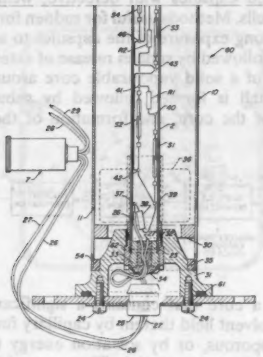
LIQUID LEVEL INDICATOR SYSTEM

Emanuel J. DiNoia, Briar Cliff Manor, N.Y., and Theodore R. Breunich, Stamford, Conn., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 13, 1970, Ser. No. 63,348
Int. Cl. G01f 23/12
U.S. Cl. 73—313 8 Claims

A liquid level indicator system in which a liquid in a tank raises or lowers a float containing angularly positioned magnetic elements according to the level of the liquid present in the tank. The float is co-axially positioned about a vertical tube containing a plurality of reed switches longitudinally aligned and connected in parallel. The magnetic element of

the float closes the reed switches at or near the level at which the float is located, thereby short circuiting resistances in an



electrical circuit in proportion to the amount of liquid present in the tank. The electric current in the circuit operates a liquid level indicator gauge.

3,678,751

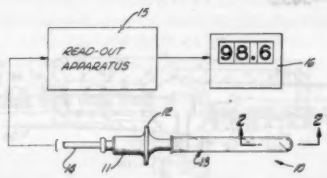
THERMOMETER PROBE

Carver A. Mead, 2036 Pasadena Gein Road, Pasadena, Calif., and Stephen Kurtin, 536 S. Euclid Ave., Pasadena, Calif.

Filed July 1, 1970, Ser. No. 59,790

Int. Cl. G01k 7/22; H01c 7/04

U.S. Cl. 73—362 AR **5 Claims**



Extending from a handle grip is an elongated hollow metal tube with an outer open end. The interior cavity of the tube contains a quantity of foamed plastic, the outer end of which is generally conically shaped and extends beyond the open tube end. A thermistor is located at the tip of the foamed plastic cone and a thin coating of rigid cementitious material is provided over the exposed end of the plastic, metal tube and side portions of the thermistor to secure the thermistor into a fixed position. A removable plastic envelope or sheath is received over the tube and exposed thermistor, with the thermistor bottoming against the inner tube end wall.

3,678,752

TESTING MEANS FOR FLUIDIC CIRCUIT ELEMENTS

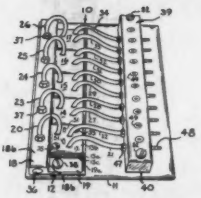
Robert C. Dellert, Normal, Ill., assignor to General Electric Company

Filed July 6, 1970, Ser. No. 52,450

Int. Cl. G01l 19/00

U.S. Cl. 73—389 **11 Claims**

A device, for use in checking the pressure of the fluid flow through each of the fluidic circuit elements of a pure fluid logic system, including a modularized read out bar having discrete compartments for each fluid line to be monitored, each compartment of the read out bar including an input port for connection to a suitable port of a given fluidic circuit element and an output port for connection to a suitable operating component of the device desired to be controlled by the given fluidic circuit element, and each compartment of the modularized read out bar further including an access port communicating with the interior of the compartment into which port



a pressure sensing probe may be inserted to take a reading of the pressure of the fluid flowing through the compartment from the aforesaid suitable port of the given fluidic circuit element.

3,678,753

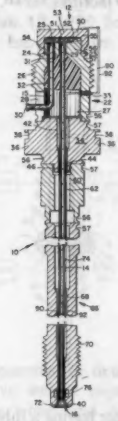
PRESSURE TRANSDUCER

Gerard Eggleston, Danvers, and Bosworth, George, Holbrook, both of Mass., assignors to Microdot, Inc., Westwood, Mass.

Filed July 28, 1970, Ser. No. 58,817

Int. Cl. G01l 9/04

U.S. Cl. 73—393 **18 Claims**



A pressure transducer with a diaphragm coupler at one end and a sensing device at the other end connected by a capillary tube. The sensing device includes a cap having a deformable surface to which a strain gauge arrangement is attached, and defining, with an upper portion of the transducer, a thin sensor compartment whereby a liquid filling the capillary tube and sensor compartment will transmit a pressure exerted against the diaphragm coupler to the deformable surface of the cap.

3,678,754

FLOW MEASURING DEVICE

Ilan Amir, and Anthony Peranio, both of Haifa, Israel, assignors to Technion Research and Development Foundation Limited

Filed Dec. 11, 1969, Ser. No. 884,343

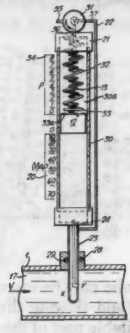
Claims priority, application Israel, Dec. 16, 1968, 31,278

Int. Cl. G01l 7/16

U.S. Cl. 73—419 **7 Claims**

A device for measuring the velocity of a fluid flowing in a closed pipe said device comprising a hollow conduit with a

pressure port at each end and a spring loaded piston loosely fitted in said conduit, each of said pressure ports connecting to



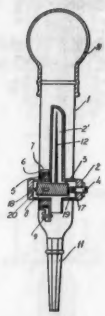
a Pitot tube having two pressure openings one of said pressure openings facing upstream and the other downstream of said fluid flowing in the closed pipe.

3,678,755

HYDROMETER

Antonion Vilas Llucia, Roger de Flor St. No. 218, Barcelona, Spain

Filed Feb. 24, 1970, Ser. No. 13,492
Claims priority, application Spain, March 1, 1969, 146,144
Int. Cl. G01c *9/08*; G01n *9/16*
U.S. Cl. 73—454 1 Claim



An improved hydrometer having a tubular receptacle with a suction bulb at one extremity and an entrance mouthpiece for electrolyte at the opposite extremity. The interior of the receptacle has a body operatively arranged to remain submerged in the suctioned liquid, the body being fitted with a horizontal arm that passes outwardly of the tube. The arm is provided with a perpendicular axis at its free extremity solidly connected to a needle or pointer. The pointer assembly is housed within a hermetic case or box disposed at the side of the tube and in communication with the electrolyte in the tube.

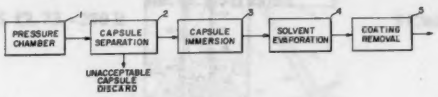
3,678,756

CAPSULES AND METHOD FOR TESTING CAPSULES FOR WALL INTEGRITY

Edward W. Merrill, Cambridge, Mass., assignor to Hans W. Estin, Leonard W. Crankhite, Jr. & William W. Welbach Trustees of The Charles River Foundation

Filed Sept. 23, 1969, Ser. No. 860,196
Int. Cl. G01m *3/32*
U.S. Cl. 73—49.3 10 Claims

Capsules having a cross-linked permeable continuous elastomeric shell are tested for leaks and for wall strength by a process in which gas or vapor is suddenly formed within the capsule to inflate acceptable capsules but to split, explode, or leave uninflated capsules with defective, weak, or leaking elastomeric shells. Methods useful for sudden formation of gas are: previous long exposure of the capsules to an inert gas at high pressure followed by sudden release of external pressure, incorporation of a solid vaporizable core around which the elastomeric shell is formed followed by subsequent rapid vaporization of the core, and formation of the elastomeric



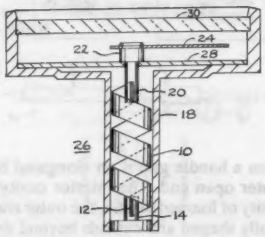
shell around a core that contains a significant quantity of vaporizable solvent held therein by capillary forces, when the core is microporous, or by solvation energy in the case of cross-linked polymeric materials. The acceptable inflated capsules are then separated from the unacceptable capsules on the basis of size or density. The acceptable capsules can be filled with a solid material such as a drug by immersing the capsules in a solution of the solid material to effect effusion of the solution into the capsule and subsequently evaporating the solvent from the capsules.

3,678,757

BIMETALLIC ELEMENTS

Robert L. Snyder, Rochester, N.Y., assignor to American Standard Inc., New York, N.Y.

Division of Ser. No. 703,861, Feb. 8, 1968, Pat. No. 3,591,353.
This application July 6, 1970, Ser. No. 60,977
Int. Cl. G01k *5/66*
U.S. Cl. 73—363.5 1 Claim



A thermosensitive element comprising a first layer and a second layer of a non-cubic metal having a high degree of crystallographic orientation in which the directions of crystallographic orientation are at right angles to each other.

3,678,758

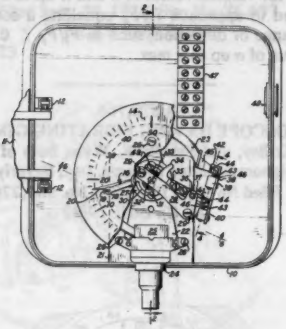
PRESSURE INDICATING AND LIMITING INSTRUMENT

Charles R. Lawrence, Broken Arrow, Okla., assignor to Frank W. Murphy Manufacturer, Inc., Tulsa, Okla.

Filed July 23, 1971, Ser. No. 151,592
Int. Cl. G01k *7/04*
U.S. Cl. 73—411 11 Claims

A pressure gauge utilizes a Bourdon tube and associated mechanical linkage to indicate pressure on a calibrated dial between predetermined limits. High pressure and low pressure limit switches are fixedly secured to a carrier having lost motion connections with the Bourdon tube and said linkage. Adjustable high pressure and low pressure stops on the face of the instrument positively interrupt the movement of the instrument pointer and thereby lock said linkage. Continued ex-

pansion or contraction of the Bourdon tube utilizes said lost motion connections with said switch carrier to operate the



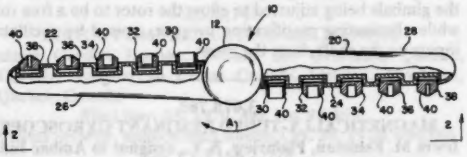
high pressure and low pressure limit switches in proper sequence. The principle of operation is also adaptable to Bourdon tube temperature gauges.

3,678,759

ROTATING CUP PARTICLE SIZING SAMPLING APPARATUS

Richard F. Schneeberger, Snyder, N.Y., assignor to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.

Filed Jan. 22, 1971, Ser. No. 108,817
Int. Cl. G01n *1/22, 15/02*
U.S. Cl. 73—432 PS **15 Claims**



A pair of rotating arms having a plurality of aerosol particle collection cups of various entrance areas fixed to the leading edges of the arms at various radially spaced points, the cups can be interchanged to vary the speed and collection efficiencies whereby particle size distributions can be calculated according to impaction theories.

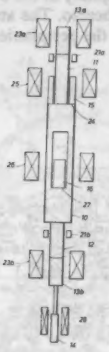
3,678,760

MAGNETIC SUSPENSION DENSIMETER INCLUDING MEANS TO VARY FLOAT VOLUME AND WEIGHT

Jean-Loup Bonnet, Verrieres-Le-Buisson, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Feb. 19, 1970, Ser. No. 116,847
Claims priority, application France, Feb. 19, 1970, 7005884
Int. Cl. G01n *9/08*
U.S. Cl. 73—453 **11 Claims**

An illustrative embodiment of the present invention includes methods and apparatus for making in situ determinations of the density or specific gravity of fluids in a well borehole. A magnetically suspendable float type densimeter carried on a sonde is suspended in the borehole and a series of three measure currents to the suspension coils made. A first measure of the float together with an internal and an external inertia block is combined with second and third measures made with only the internal inertia block and then only the external inertia block influencing the measure current. The



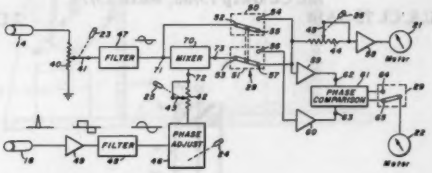
three measure current signals are then combined to derive a signal proportional to the fluid density which may be recorded as a function of borehole depth.

3,678,761

METHOD AND APPARATUS FOR DETERMINING UNBALANCE

Bobby J. Blackburn, Columbus, Ohio, assignor to IRD Mechanalysis, Inc., Worthington, Ohio

Filed Jan. 12, 1970, Ser. No. 2,100
Int. Cl. G01m *1/28*
U.S. Cl. 73—457 **4 Claims**



A method and apparatus for determining the amount and location of corrective weight required to compensate unbalance in a vehicle wheel and tire without removing the wheel and/or tire from the vehicle. The wheel and tire are maintained out of contact with the ground and are turned at conventional highway speeds. An index tape is applied to the tire rim. Two separate spinnings of the wheel are required: one with a known trial weight affixed to the wheel rim, and one with the wheel and tire in their normal condition. Two meters are provided which are calibrated to indicate the amount of unbalance compensating weight required at the wheel rim and the angular position of the compensating weight relative to the index tape. The method and apparatus are applicable to other rotatable bodies.

3,678,762

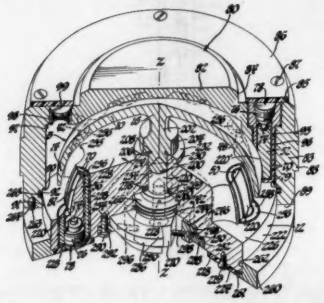
BELL GYRO AND METHOD OF MAKING SAME

Richard E. Denis, Beverly, Mass., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 6, 1969, Ser. No. 863,857
Int. Cl. G01p *9/04*
U.S. Cl. 73—505 **10 Claims**

A bell-like rotation sensor comprised of a platform base having a post supporting forcer electrodes, a bell-like high-Q

member supported by the post and a bore therethrough telescoping the post and forcer electrodes, a platform housing telescoping the outer periphery of the bell and supporting sensor electrodes adjacent thereto. The atmosphere surrounding the bell is evacuated, and the peripheries of the base and housing adjacent the electrodes are relieved to reduce damping on the bell sides. Means are provided for adjusting the azimuth position of the bell sides relative to the forcer electrodes and for locking and sealing the bell to the platform base. The platform housing is adjustable in azimuth relative the bell and platform base and is sealable thereto.

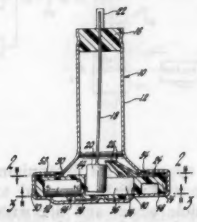


3,678,763

ACCELERATION SENSOR

Rodney A. Brooks, Bayside, and Vincent A. Orlando, Greendale, both of Wis., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 23, 1971, Ser. No. 173,806
Int. Cl. G01p *15/02*; H01h *35/14*
U.S. Cl. 73—514 **2 Claims**



A sensor includes a cylindrical mass of predetermined weight supported on a deflectable rod and movable within a sector shaped recess including angularly diverging walls defining an included angle 2θ. The mass is located in unactuated position in tangential engagement with the walls adjacent their proximal ends by an axial magnet having its axis coplanar with a bisector of the included angle. The magnet applies a preload force F_p to the mass along a bisector of the included angle. When an impulse force F_I greater than a predetermined amplitude and time is applied to the mass within the predetermined included angle of response 2α max, the mass will move with generally uniform sensitivity to actuated position in engagement with a deflectable spring contact finger in accordance with with:

$$\frac{F_I}{F_P} > \frac{\mu \sin \theta + \cos \theta}{\cos (\alpha - \theta) - \mu \sin (\alpha - \theta)}$$

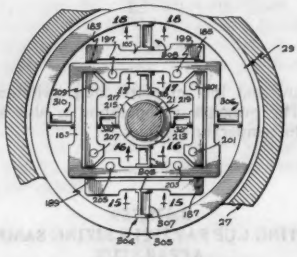
where μ is the coefficient of friction between the mass and one of the walls of the recess and α is the angle of the vector of F_I with respect to the bisector of 2θ. In order to achieve generally uniform sensitivity to applied impulse forces within the predetermined included angle of response 2α max, F_I/F_P is determined for various values of θ and λ up to λ max and θ is then selected to approach F_I/F_P equalling a constant with a minimum range or deviation, such as $F_I/F_P \geq 0.9$ and ≤ 1.1 for each value of α up to α max.

3,678,764

GYROSCOPE HAVING VIBRATING GIMBALS

Harold F. Erdley, and Stanley F. Wyse, both of Los Angeles, Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Nov. 20, 1967, Ser. No. 684,270
Int. Cl. G01c *19/22*
U.S. Cl. 74—5 **46 Claims**



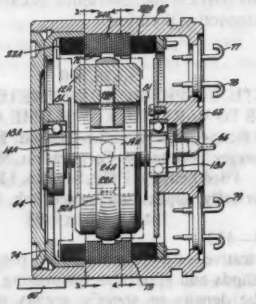
A gyroscope in which the rotor is supported with respect to its driving shaft by a plurality of intermediate gimbals in which each intermediate gimbal is torsionally attached to the rotor and to the driving shaft, the attachments being positioned, the spring constants being adjusted, and the moments of inertia of the gimbals being adjusted to allow the rotor to be a free rotor while eliminating rectification torques, caused by oscillatory inputs on the shaft, from the rotor.

3,678,765

MAGNETICALLY-TUNED RESONANT GYROSCOPE

Irwin M. Feldman, Plainview, N.Y., assignor to Ambac Industries, Incorporated, Garden City, N.Y.

Filed Dec. 15, 1969, Ser. No. 884,807
Int. Cl. G01c *19/24*
U.S. Cl. 74—5.46 **8 Claims**



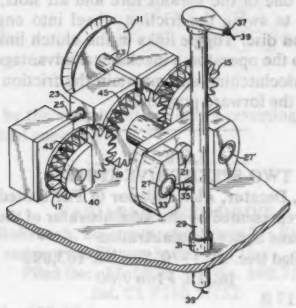
A "tuned" gyroscope having spring restraints, which is tuned to resonance by a restoring torque produced by hysteresis motor windings which also spin the gyro rotor.

3,678,766

DRIVE FOR IN-SLOT WINDING MACHINE

Eugene E. Geber, Ossian, Ind., assignor to Industra Products, Inc., Ft. Wayne, Ind.

Filed Sept. 30, 1970, Ser. No. 76,697
Int. Cl. F16h *21/00*
U.S. Cl. 74—23 **12 Claims**



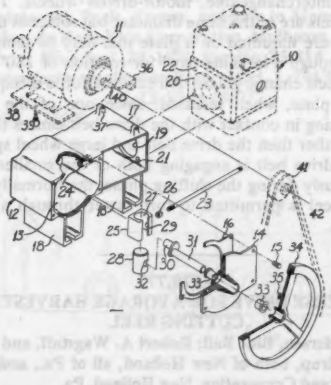
A mechanical drive arrangement is disclosed for converting rotary motion of one shaft into a combined rotary and axial motion of a second shaft, the latter motion being particularly useful in an automatic stator in-slot winding machine. The drive arrangement has first and second non-circular gears constrained to rotate about fixed axes, a source of energy rotatably driving one of those axes or shafts, and a third gear rotatable about a movable axis and adapted to mesh with each of the first and second gears, the third gear axis being movable parallel to itself in a plane, and a ball and socket linkage between an eccentric point on the third gear and the driven shaft.

3,678,767

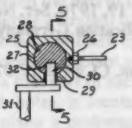
PISTON PUMP ACTUATING MECHANISM

Andrew Gordon Lennon, Dollard des Ormeaux, Quebec, Canada, assignor to Crane Canada Limited, Montreal, Quebec, Canada

Filed Nov. 25, 1970, Ser. No. 92,663
Claims priority, application Canada, Oct. 26, 1970, 096584
Int. Cl. F16h *21/18*
U.S. Cl. 74—50 **2 Claims**



A driving block is rigidly secured to and reciprocable with a pump piston rod. The driving block has a sliding block reciprocable therein, and a crank of a crankshaft is rotatable in the sliding block to convert rotary motion of the crankshaft into reciprocating movement of the piston rod. The sliding and driving blocks are shaped and arranged so that the rigid connection of the piston rod to the driving block is all that is needed to guide the driving block in its movement.

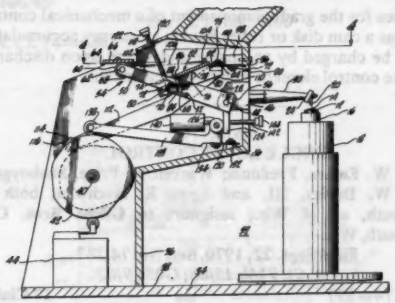


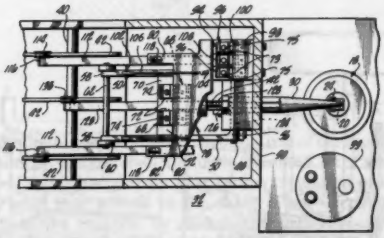
3,678,768

RECIPROCATING DRIVE APPARATUS

Momtaz Nosshi Mansour, Pasadena, Calif., assignor to United Corporation, Monrovia, Calif.

Division of Ser. No. 746,229, July 19, 1968, Pat. No. 3,601,304. This application Oct. 28, 1970, Ser. No. 84,783
Int. Cl. F16h *25/08*
U.S. Cl. 74—54 **7 Claims**



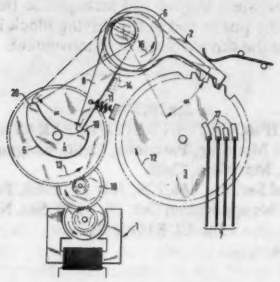


A wire bonder having a housing, a manipular workpiece mounting post secured to the housing and a bonding tip reciprocally movable relative to the mounting post. The bonding tip is secured in a holder connected to an ultrasonic transducer and the assembly is in turn operatively engaged with a drive mechanism for reciprocating the bonding tip which includes a first linkage which is secured to a first leaf spring flexibly attached to the housing. Flexibly attached to the first linkage by a second leaf spring is another linkage, one end of which movably engages a planar surface of the housing and another end of which mounts the transducer and tip assembly.

3,678,769
ECCENTRIC AND KNEE LEVER DRIVE FOR MECHANICAL CONTROL ELEMENTS

Walter K. Holzer, Meersburg, Germany, assignor to Holzer Patent AG, Zug, Switzerland

Filed Oct. 19, 1970, Ser. No. 81,968
Claims priority, application Germany, Oct. 27, 1969, P 19 54 023.9
Int. Cl. F16h *27/02*
U.S. Cl. 74—118 5 Claims

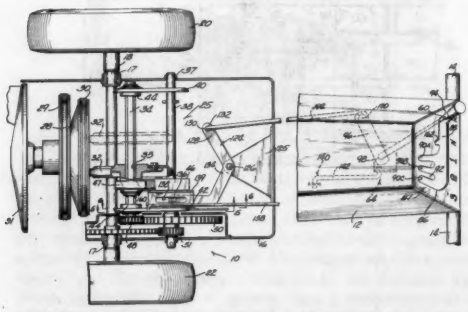


A device for the gradual movement of a mechanical control element as a cam disk or roller having an energy accumulator that can be charged by an engine and which upon discharge moves the control element by mechanical means.

3,678,770
SINGLE LEVER CONTROL

Edward W. Enters, Fredonia; Warren H. Price, Sheboygan; John W. Davies, III, and Lynn E. Hochwitz, both of Plymouth, all of Wis., assignors to Gilson Bros. Co., Plymouth, Wis.

Filed Sept. 22, 1970, Ser. No. 74,282
Int. Cl. F16h *15/08*; G05g *9/02*
U.S. Cl. 74—197 17 Claims

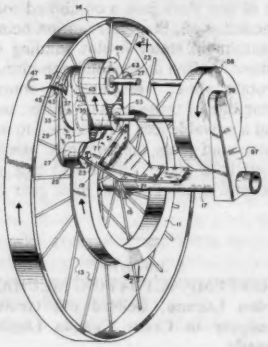


Disclosed herein is a single lever control for varying the speed and direction of rotation of drive wheels in a vehicle such as a snow thrower and for also clutching and declutching the drive train to the drive wheels. The control lever is supported on the vehicle handling bar assembly for movement about first and second axes and is guided for movement by a guide track having forwardly and rearwardly extending slots with appropriate indicia for the various forward speeds and reverse. Movement of the control lever about the first axis in a slot transverse to the direction of movement of the vehicle, actuates a speed control rod linkage to axially shift a rubber friction wheel on a spline shaft to change the position of engagement of the friction wheel with respect to the drive disc to vary the speed of the vehicle drive wheels. Forward movement of the control lever about the second axis, and from the transverse slot into one of the various fore and aft slots, moves a clutch linkage to swing the friction wheel into engagement with the friction disc. Toggle links in the clutch linkage provide a "feel" to the operator, a mechanical advantage to assist clutching and declutching and maintain the friction wheel in engagement in the forward positions.

3,678,771
TWO-SPEED DRIVE SYSTEM

John L. Burch, Decatur, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 31, 1970, Ser. No. 103,091
Int. Cl. F16h *9/00*
U.S. Cl. 74—217 R 8 Claims



A two-speed drive system for driving an independently driven vehicle wheel comprising a relatively large wheel sprocket attached to the vehicle wheel. A drive belt passes around the large wheel sprocket and one of a pair of smaller, selectively interchangeable, motor-driven wheels. The two smaller wheels are of the same diameter but rotate at different speeds and are mounted on a plate that may be temporarily released through a latching pawl for rotation of 180° so that the two wheels change places. No external force is required to rotate the plate, when released, since one of the smaller wheels turning in contact with the drive belt causes the plate to rotate rather then the drive belt and large wheel sprocket. When the drive belt is engaging both of the smaller wheels simultaneously during the shifting phase, the normally slower turning wheel is permitted to turn faster through a ratchet mechanism.

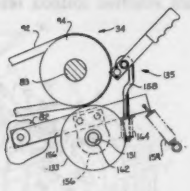
3,678,772
REVERSE DRIVE FOR A FORAGE HARVESTER CUTTING REEL

Poul K. Pedersen, Blue Ball; Robert A. Wagstaff, and Thomas W. Waldrop, both of New Holland, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed April 29, 1971, Ser. No. 138,510
Int. Cl. F16h *9/04*; A01d *75/08*
U.S. Cl. 74—220 5 Claims

The cutting reel of a forage harvester is driven in the for-

ward chopping direction by the main input drive through a detachable coupling and in the reverse blade sharpening



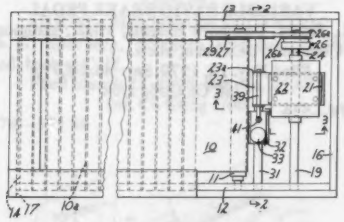
direction by the main input drive by a reversing drive bridging the detached coupling.

3,678,773

VARIABLE SPEED DRIVE

Royal E. Rohrbach, Bessemer, and Royce W. Ray, Leeds, both of Ala., assignors to Fitness Industries, Inc.

Filed Dec. 22, 1970, Ser. No. 100,753
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 A **2 Claims**



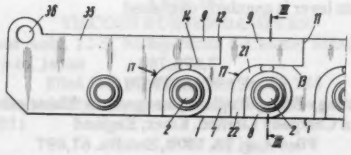
A variable speed drive comprising a drive motor mounted in a frame for pivotal movement by means of a reversible motor and screw drive unit operatively connected to the drive motor. A shaft to be driven is mounted parallel to the shaft of the drive motor and power is transmitted from the drive motor to the shaft to be driven through a belt and variable speed pulley, preferably of the type in which the diameter of the pulley decreases as the motor shaft is moved away from the shaft to be driven, and vice versa.

3,678,774

TRANSMISSION DEVICE

Theo Patrignani, Paris, France, assignor to Manufacture des Machines du Haut-Rhin Corporation, Mulhouse, France

Filed Sept. 28, 1970, Ser. No. 75,814
Claims priority, application France, Oct. 1, 1969, 6933477
Int. Cl. F16g *13/02*
U.S. Cl. 74—250 R **6 Claims**



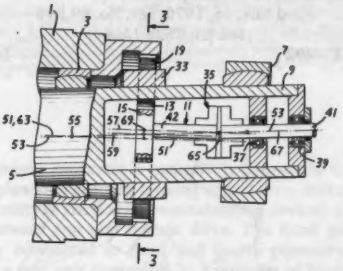
A transmission device in the form of a selectively rigidified chain which can transmit substantial forces both in tension and compression. The successive links of the chain have at least two parallel main plate members connected by transverse pivot pins, each one of such plates or members presenting a projection with an active transverse forward face and an active transverse rear face, such faces being adapted to engage the active transverse rear and forward faces, respectively, of the neighboring links when the part of the chain incorporating such links is extended along a straight line. Each plate member of the links of the chain is constituted by a single plate pierced by two holes for the reception of pivot pins which connect it to the neighboring links; a first part of such plate, situated in the vicinity of one of such holes, is located in a first plane and presents in such first plane a prolongation forming the said projection. The second part of the plate, situated at the location of the other hole, is also plane, but is offset laterally from the first portion of the plate through a distance which is equal to the thickness of the plate. Successive links are connected by having the second parts of the plate members of one link telescoped within the first parts of the next adjacent link, a pivot pin extending through the aligned holes in the first and second plate members of the links.

3,678,775

APPARATUS FOR TRANSMITTING ROTATIONAL POWER TO A ROLL

Erik Danielsson, Karlstad, Sweden, assignor to Aktiebolaget Karlstad Mekaniska Werkstad, Karlstad, Sweden

Filed Oct. 20, 1970, Ser. No. 82,447
Claims priority, application Sweden, Oct. 21, 1969, 14406/69
Int. Cl. F16h *57/00*
U.S. Cl. 74—410 **3 Claims**



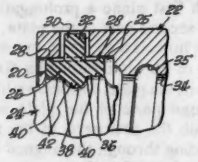
Rotational power is transmitted to a roll of the type having a cylindrical, hollow shell rotatably mounted on a stationary, central through-shaft by a gear system composed of an internally spur gear affixed to the shell, a pair of pinion gears mounted for rotation by self-aligning bearings carried on shafts affixed to the through-shaft of the roll and an external spur gear positioned within a cavity in the main shaft. The pinion gears partially project through openings formed in walls that define a cavity in the shaft, and the axis of each pinion gear shaft is oriented parallel to the shell of the roll in a plane that is perpendicular to the plane along which the shell and shaft will deflect when loaded. The external spur gear is connected to a drive shaft that is composed of two portions connected to each other by a universal coupling, the portion of the drive shaft carrying the external spur gear thus being mounted for articulation relative to the main power input shaft. The elements of the gear system are maintained in parallel relation to each other and in proper mesh, regardless of the extent of deflection of the shell and through-shaft of the roll under load.

3,678,776

SEALING AND WIPING MEANS FOR BALL SCREW ACTUATOR

Donald S. Patterson, Corona, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.

Filed Sept. 21, 1970, Ser. No. 74,032
Int. Cl. F16h 55/22, 57/04
U.S. Cl. 74—459 23 Claims



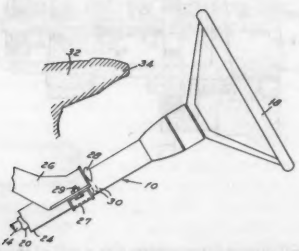
A resiliently deformable elastomeric ring seats in a non-rotary manner in a continuous inner circumferential channel of a nut of a ball screw actuator to cooperate with the screw of the actuator as a wiper and sealing means. The channel is wider than the ring to permit slight axial shift of the ring and the ring has at least one continuous narrow outer circumferential sealing rib in contact with the bottom of the channel that yields sufficiently under radial compression to compensate for the range of clearances afforded by the given tolerances of the nut and screw to insure that the body of the ring will not be radially compressed to a destructive degree.

3,678,777

ENERGY ABSORBING STEERING CONTROL SYSTEM

Ralph A. Olsen, Grosse Pointe Woods, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 16, 1970, Ser. No. 89,890
Int. Cl. B62d 1/18
U.S. Cl. 74—492 10 Claims



An energy absorbing steering column for a motor vehicle having a tubular jacket with a plastically deformable, bendable section. The column is constructed to absorb energy by angularly displacing the upper column portion and buckling the bendable section when an impact force is exerted on the steering wheel.

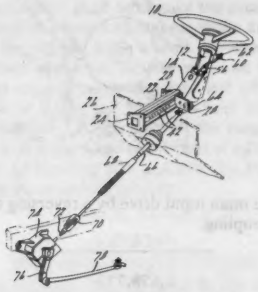
3,678,778

ADJUSTABLE STEERING COLUMN

Donald W. Groves, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sept. 21, 1970, Ser. No. 73,826
Int. Cl. B62d 1/18
U.S. Cl. 74—493 8 Claims

An adjustable steering wheel mechanism particularly suitable for commercial vehicles and having a movable steering wheel support that moves along an axis extending at an acute angle to the axis of the steering shaft. A spring pressed locking bolt mechanism secures the steering wheel support in any one of several positions as selected and adjusted by the vehicle operator.

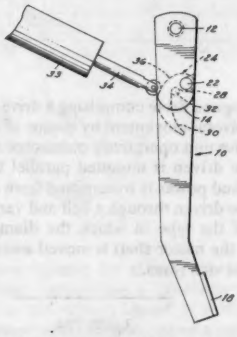


3,678,779

VARIABLE RATIO BRAKE PEDAL

Francis L. Janosi, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 12, 1970, Ser. No. 88,773
Int. Cl. G05g 1/04
U.S. Cl. 74—516 7 Claims



A variable ratio brake pedal assembly including a foot operated pedal lever, a brake applying means and an intermediate crescent-shaped lever interposed between the pedal lever and the brake applying device. The intermediate lever has cam surfaces that engage both the brake applying device and the foot operated pedal lever whereby a change in effective mechanical advantage ratio occurs as force is transmitted from the pedal lever through the intermediate lever to the brake applying device when the pedal lever pivots and the intermediate lever is angularly displaced.

3,678,780

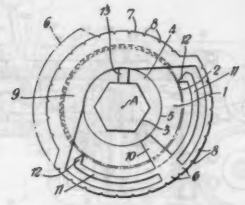
CAM ASSEMBLY

Ivor Ponting, Essex, England, assignor to Electrical Remote Control Company Limited, Essex, England

Filed Aug. 26, 1970, Ser. No. 67,097
Claims priority, application Great Britain, Aug. 24, 1969, 42,754/69
Int. Cl. F16h 53/00
U.S. Cl. 74—568 R 8 Claims

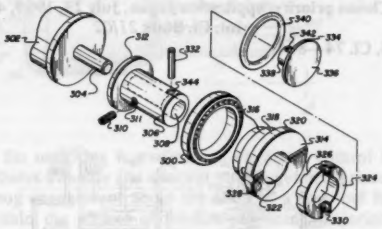
A cam assembly includes a generally cylindrical central body formed with an external ring of teeth and encircled by

two identical annular members each having two inwardly directed pawls resiliently engaging the teeth at circumferentially spaced locations. The annular members have profiled outer peripheral control surfaces for co-operating



with a cam follower extending across both surfaces. To adjust the overall control surface, the annular members are manually turned about the body axis, the pawls riding over the teeth, and then the annular members are clamped to the body, while the pawls hold the annular members in position.

3,678,781
ADJUSTABLE THROW ECCENTRIC
Roderick G. Rohrberg, Torrance, and Don E. Harvey, Inglewood, both of Calif.
Filed March 23, 1970, Ser. No. 21,672
Int. Cl. G05g 1/00
U.S. Cl. 74—571 M 5 Claims



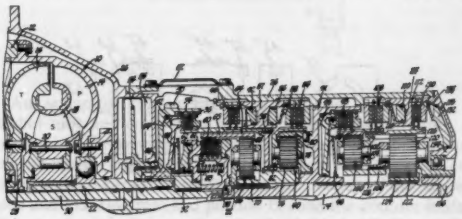
A portable carriage adapted to be mounted on a tubular workpiece is used to perform cutting operations followed by in-place welding operations on such workpiece using two subassemblies interchangeably mounted on the carriage, one for cutting and one for welding. The carriage is rotatable around the stationary workpiece or may be held stationary while the workpiece rotates. After preliminary trimming, fusion welding is progressively accomplished in a circular path to join the abutting ends of the workpiece components.

3,678,782
VISCOUS RUBBER DAMPERS
Hidemasa Aoki, 12-5, Nishigotanda 8-Chome, Shinagawa-ku, Tokyo-to, Japan
Filed July 28, 1970, Ser. No. 58,784
Claims priority, application Japan, Nov. 15, 1969, 44/108011
Int. Cl. F16f 15/12
U.S. Cl. 74—574 4 Claims

In a damper comprising a mounting disc, annular rubber rings secured to the opposite sides of the mounting disc, a dish shaped outer inertia mass member accommodating the mounting disc and the annular rubber rings, and an outer inertia mass member closing the opening of the outer inertia mass member and a viscous fluid filled in a spaced defined between inner and outer mass members, the dish shaped outer inertia

mass member is provided with a flange which is folded inwardly onto the outer peripheral surface of the inner inertia mass member.

3,678,783
POWER TRANSMISSION
John J. O'Malley, Livonia, Mich., and Marion D. Smith, Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed June 1, 1970, Ser. No. 41,928
Int. Cl. F16h 57/10; B60k 17/28
U.S. Cl. 74—759 4 Claims

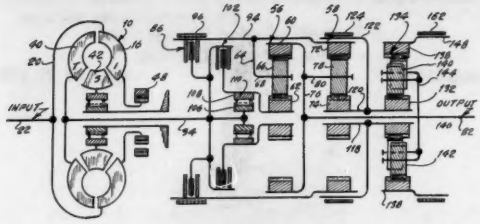


The torque converter is operatively connected to first and second planetary gearsets forming a front drive unit controlled by a plurality of friction-drive-establishing devices to produce three forward and one reverse drive. The front gear unit is drivingly connected to third and fourth planetary gearsets forming a rear unit controlled by a plurality of friction-drive-establishing devices to produce at least three different speed ratios in the rear unit. The units can be combined to provide a large overall ratio change and a large selection of relatively, evenly-steeped, forward ratios between the lowest and the highest ratio. By providing for reverse gear in the front gear unit, a plurality of reverse drive ratios can be obtained by changing the gear ratio of the rear unit.

3,678,784
AUTOMOTIVE TRANSMISSION MECHANISM HAVING FOUR FORWARD DRIVING SPEED RATIOS
George E. Lemieux, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 29, 1970, Ser. No. 85,014
Int. Cl. F16h 3/44, 57/10
U.S. Cl. 74—759 6 Claims

A four-speed ratio power transmission for use in an automotive vehicle driveline including two simple planetary gear units and a compound planetary gear unit, the reaction element for the simple planetary gear units serving as a power input element for the compound planetary gear unit whereby a split torque delivery path is established through said transmission during low speed ratio operation, said input element for the

compound planetary gear unit serving as a reaction element during second speed ratio operation, the compound planetary gear unit being situated in a separate housing whereby the transmission structure may be converted to a three-speed ratio transmission.



3,678,785

FOUR SPEED RATIO POWER TRANSMISSION MECHANISM FOR AUTOMOTIVE VEHICLES

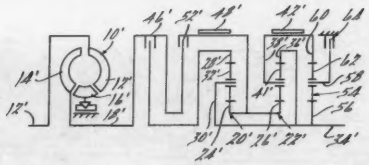
Hans J. Stahlberg, Ahornweg, Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed April 19, 1971, Ser. No. 135,258

Claims priority, application Germany, May 14, 1970, P 20 23 639.9

Int. Cl. F16h *57/10*

U.S. Cl. 74—759 **2 Claims**



A four-speed ratio power transmission mechanism adapted to be used in an automotive vehicle driveline comprising a Simpson type planetary gear system and a simple planetary gear unit situated between the low speed ratio reaction element of the Simpson gear system and the power output shaft whereby the torque multiplication achieved during low speed ratio operation is augmented to provide an increased low torque ratio, the elements of the additional simple planetary gear unit and the elements of the Simpson gear system having a large degree of interchangeability, wherein a minimum number of clutch and brake control members are required and the manufacturing cost penalty due to the additional torque multiplication ratio is slight.

3,678,786

VARIABLY CONTROLLED PLANETARY DRIVE STRUCTURE AND METHOD

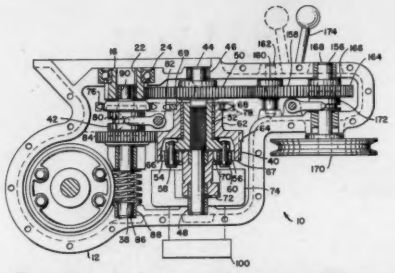
Otto E. Szekely, Palm Beach, Fla., assignor to Power Flo Products Incorporated, Hialeah, Fla.

Filed Oct. 12, 1970, Ser. No. 79,875

Int. Cl. F16h *3/44, 37/06, 1/38*

U.S. Cl. 74—782 **6 Claims**

The planetary drive structure includes a variable speed transmission by which the drive structure speed is universally variable in both forward and reverse directions. The drive structure also includes selectively engageable power takeoff structure. The variable speed feature of the transmission is effected by means of a sun gear and a ring gear having planet gears positioned therebetween and means for varying the resistance to rotation of the sun gear. The means for varying the resistance to rotation of the sun gear may be hydraulically or electrically energized and includes selectively operable accessory drive structure. The method of the invention includes the step of varying the speed of a hydraulic transmission in planetary drive structure in both forward and reverse directions substantially universally over the range of speeds thereof, selectively actuating accessories through the variable speed transmission and selectively actuating power takeoff means with the planetary drive structure.



3,678,787

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

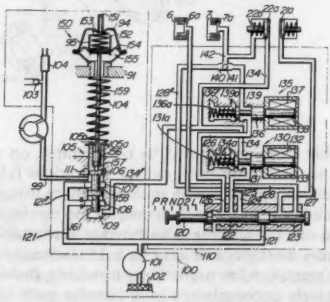
Shin Ito, and Seitoku Kubo, both of Toyota-shi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed April 3, 1970, Ser. No. 25,403

Claims priority, application Japan, July 29, 1969, 44/60157

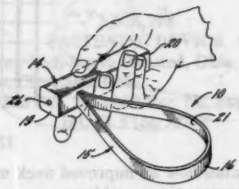
Int. Cl. B60k *21/02*

U.S. Cl. 74—864 **3 Claims**



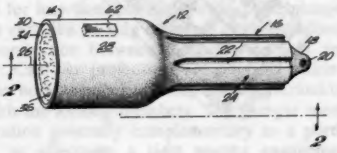
A hydraulic control system for an automatic transmission including a transmission gear system provided with hydraulic servos for the brake bands or the clutches, wherein, in addition to a pressure regulator valve for controlling pressure oil applied to said servos and shift valves for establishing low and high forward drive ratios, a diaphragm mechanism is provided to additionally apply the engine intake manifold vacuum to the pressure regulator valve so that said drive ratios are varied by the operation of said shift values and at the same time the action of the engine suction applied to the pressure regulator valve is changed through the associated oil passages to vary the control action of the pressure regulator valve to thereby smooth out the shifts.

3,678,788
CONTAINER TOP OPENER
Leo F. Matti, 3605 Guilford Rd., Rockford, Ill.
Filed Oct. 2, 1970, Ser. No. 77,543
Int. Cl. B67b 7/00; B25b 13/52
U.S. Cl. 81—3.43 2 Claims



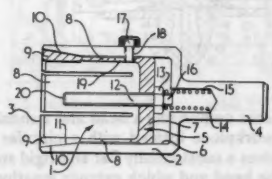
An opener including a loop with both ends fastened to the side of an elongated handle at a position spaced between one end of the handle and its center, so that the loop can be bent in either direction lengthwise of the handle and used to cinch the handle against a lid to be turned therewith to screw the lid loose from a container.

3,678,789
FUSE REMOVAL TOOL
George E. Wilson, 1125 N.W. 143rd Street, Miami, Fla.
Filed Feb. 24, 1970, Ser. No. 13,687
Int. Cl. B25b 13/52, 13/06
U.S. Cl. 81—64 1 Claim



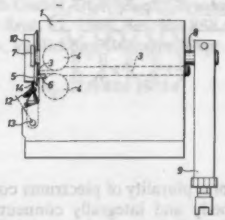
A tool for removing fuses from an electrical control box which includes a handle and a socket, the socket being sized to nest in snug engagement about the head of a fuse and liner means within the socket of friction-producing material in response to an axial pressure of the tool directed towards the fuse so that the tool may be employed to remove the fuse by rotating the tool about its longitudinal axis.

3,678,790
MACHINE TOOLS
Raymond A. Riley, Bulkington near Nuneaton, England, assignor to The Dunlop Company Limited, London, England
Filed June 2, 1970, Ser. No. 42,835
Claims priority, application Great Britain, June 5, 1969, 28,420/69
Int. Cl. B23b 25/00
U.S. Cl. 82—38 7 Claims



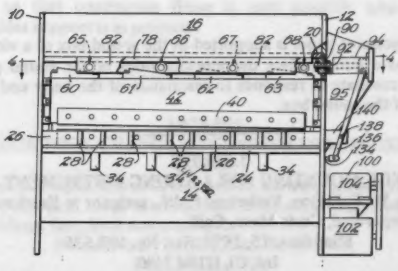
A loading device for a machine tool in which a workpiece holder is arranged to be mounted on a machine tool, the workpiece holder having releasable gripping means associated therewith for retaining the workpiece. The gripping means is provided with a tapering surface arranged to provide, in conjunction with a cooperating tapering surface on the workpiece holder, a sticking-taper wedging action to grip the workpiece on axial movement of the workpiece into or over the gripping means. The gripping means is also arranged to permit the workpiece to be withdrawn therefrom solely by an axially directed extracting force applied to the workpiece, of which the following is a specification.

3,678,791
APPARATUS FOR CUTTING ANNULAR ELASTIC BANDS
Anders Karl Oskar Eriksson, Bromma, and Jan Folke Wallenius, Taby, both of Sweden, assignors to AB Svensk Industris Konstruktions-och berakningskontor Sikob, Solna, Sweden
Filed Aug. 31, 1970, Ser. No. 68,157
Claims priority, application Sweden, Aug. 29, 1969, 12035/69
Int. Cl. B26d 7/06
U.S. Cl. 83—95 4 Claims



An apparatus for cutting annular elastic bands from a rubber tube and comprising a knife-blade, a counter-knife, a mechanism for moving said knife-blade, said knife-blade during the cutting operation forming an angle with the counter-knife, and a means for flattening an end portion of the rubber tube and indexing said end portion beyond the counter-knife. The mechanism for moving the knife-blade displaces the knife-blade in the longitudinal direction of the knife edge so that an elastic deformation of the tube in the longitudinal direction of the counter-knife is substantially eliminated. A loop is formed at the edge of the flattened tube initially cut through by the knife-blade which loop is placed around a finger during the finishing of the cutting operation.

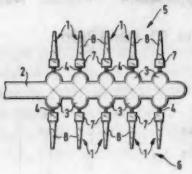
3,678,792
METAL PLATE SHEARS
Frank Dvorak, Box 134, Cosmos, Minn.
Filed Dec. 15, 1970, Ser. No. 98,414
Int. Cl. B26d 5/08, 7/02
U.S. Cl. 83—459 10 Claims



A metal plate shears for cutting large sheets of metal in which four rollers are hydraulically slid between a guide way

and four inclined ramps so as to force a cutting blade downward through a large metal plate. A high leverage hydraulic clamp serves to hold the plate in place during the shearing operation. The edge of the lightweight cutting blade is kept straight by a unique truss arrangement mounted on the side of the blade.

3,678,793
MOUNTING FOR A PLURALITY OF PLECTRUMS
Rainer Schutze, Muhltalstrasse 128, Heidelberg, Germany
Filed Oct. 26, 1970, Ser. No. 83,852
Claims priority, application Germany, Aug. 27, 1970, G 70 32 033.1
Int. Cl. G10c *1/06*; G10d *3/16*
U.S. Cl. 84—258 **4 Claims**



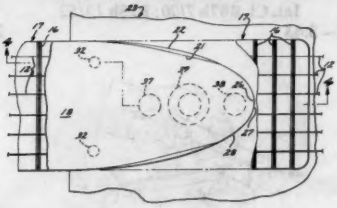
A mounting for a plurality of plectrums comprises an elongated support body and integrally connected therewith by means of tearable webs at least one row of plectrums forming a unitary structure with the body.

3,678,794
RESONATOR FOR STRINGED INSTRUMENT
Michael Tansky, 541 Olive Ave., Long Beach, Calif.
Filed May 15, 1969, Ser. No. 825,019
Int. Cl. G10d *1/02*
U.S. Cl. 84—275 **10 Claims**

A resonator panel is supported in the sound box of a violin, and has a pair of discs on opposite sides of the sound post which resonate in response to resonance of the belly and the back of the sound box.

3,678,795
NECK MOUNTING FOR A STRING INSTRUMENT
George W. Fullerton, Fullerton, Calif., assignor to Earthwood, Incorporated, Costa Mesa, Calif.
Filed Nov. 15, 1971, Ser. No. 198,536
Int. Cl. G10d *3/00*
U.S. Cl. 84—293 **10 Claims**

The present invention relates to a string type musical instrument; and more particularly relates to a neck mounting for attaching the instrument neck to the instrument body. The various problems associated with this mounting are discussed and

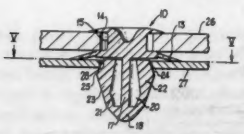


the disclosure teaches how an improved neck mounting may be achieved to overcome these problems.

3,678,796
MUSIC SLIDE RULE
Vito Puopolo, 23 West Street, Norwood, Mass.
Filed Oct. 12, 1970, Ser. No. 79,897
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **1 Claim**

A device consisting of a rule and transparent slides with the rule inscribed with the great staff and keys of a piano, while the slides may have the various notes of a major scale, triad, etc., inscribed thereon such that the notes simultaneously appear on the great staff and keyboard.

3,678,797
FASTENER
Clifford A. Seckerson, Iver Heath, England, assignor to TRW Inc., Cleveland, Ohio
Filed July 2, 1970, Ser. No. 51,878
Claims priority, application Great Britain, July 3, 1969, 33,692/69
Int. Cl. F16b *13/04*, *19/00*
U.S. Cl. 85—5 R **8 Claims**



A resilient fastener comprising a head and a shank which is mountable in a workpiece formed with a circular aperture. The shank comprises a substantially flat and rigid stem, which is integral with the head and which extends lengthwise of the shank in a plane containing the longitudinal axis of the shank. Extending lengthwise of the shank on opposite sides of the stem are two resilient tongues each of which is joined to the

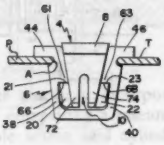
stem along one longitudinal edge and each of which has a free longitudinal edge which is flexible towards the stem in a plane perpendicular to the plane of the stem. Preferably, an outwardly projecting rib is provided extending lengthwise along the free longitudinal edge of each tongue and each rib is shouldered adjacent the head.

3,678,798

FASTENING DEVICE

Clarence R. Van Niel, North Olmsted, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 29, 1969, Ser. No. 888,232
Int. Cl. F16b *13/04*
U.S. Cl. 85—81 **5 Claims**



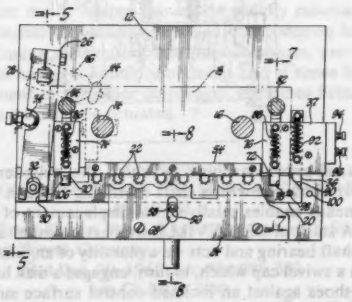
A fastening device for insertion through an aperture in a support member including a deformable body adapted for mounting with the support member. A plunger member is initially integrally mounted on the body member. The body member includes an opening therein and the plunger member is mounted in superposed relation on the body member adapted for insertion into the opening. The plunger member includes cam-like locking members disposed adjacent the integral connection between the body member and plunger member. Cam-like projections are disposed within the opening in the body member for snap-action interlocking engagement with the locking members. The plunger member has a configuration generally complementary to a portion of the opening to effectuate a tight seating engagement of the plunger member within the body member in the installed position of the device.

3,678,799

AMMUNITION RELOADER

Robert A. Leich, Southfield, Mich., assignor to Camdex, Inc., Detroit, Mich.

Filed June 29, 1970, Ser. No. 50,548
Int. Cl. F41f *11/02, 11/04*
U.S. Cl. 86—26 **19 Claims**



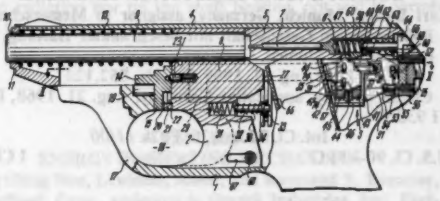
Cartridge reloading apparatus of the type having a plurality of spaced stations where operations are performed on cartridges which move linearly and intermittently between stations under control of a shuttle bar. The shuttle bar is caused to move in a generally rectangular path to intermittently advance the cartridges. A cam pivots a crank arm connected to the shuttle bar to move the shuttle bar against the bias force of a spring to the advanced position. A second lobe on the cam restrains the return of the shuttle bar to the initial position to eliminate excessive noise and vibration. Locater holes are disposed in the shuttle bar and the base of the apparatus to periodically check the position of the shuttle bar relative to the work stations. A threaded shank carrying a roller bearing is provided to urge the shuttle bar into engagement with the cartridges but is easily removed to permit manual withdrawal of cartridges from the shuttle bar.

3,678,800

SELF-LOADING PISTOL WITH COCKING TRIGGER

Alex Seidel; Tilo Moller, both of Oberndorf/Neckar, and Helmut Weldle, Beffendorf, all of Germany, assignors to Firma Heckler & Koch GmbH, Oberndorf, Germany

Filed Sept. 17, 1969, Ser. No. 858,641
Claims priority, application Germany, Sept. 18, 1969, P 17 28 248.3
Int. Cl. F41c *19/14*
U.S. Cl. 89—147 **14 Claims**



A self-loading pistol includes a spring-loaded firing pin located within a breech assembly and having a downwardly projecting nose engageable with a sear coupled to a trigger and movable generally parallel to the breech for at least part of its movement to displace the firing pin within the breech and thereafter to release the striker pin on continuing movement of the trigger thereby firing the shot. The pistol may also be provided with a catch pawl having a stop face which catches and releases the nose part when the pistol is arranged for continuous firing. In this case however the pistol must be fitted to a shoulder support which embodies means co-acting with the catch pawl to allow it to come into the operative position so that continuous firing is only possible when the shoulder support is in position.

3,678,801

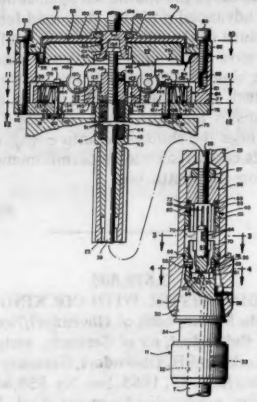
QUICK TOOL CHANGE MECHANISM FOR MACHINE TOOLS

Robert Z. Hague, Oradell; Howard H. Laucks, S. Hackensack, and Alfred J. Mastropole, Saddle River, all of N.J., assignors to Moog, Inc., East Aurora, N.Y.

Filed March 16, 1970, Ser. No. 19,703
Int. Cl. B23c *5/26*
U.S. Cl. 90—11 D **17 Claims**

A selectively operable mechanism is provided for manually changing quickly tool holders on the spindle of a machine

tool. The operator uses one hand to grasp the tool holder at the spindle, either the one being removed or a replacement,



and with his other hand operates a control to effect either a release from or securement to the spindle of the tool holder.

3,678,802

ARRANGEMENT OF COOLING CHAMBERS FOR ROCKET ENGINE COMBUSTION CHAMBERS

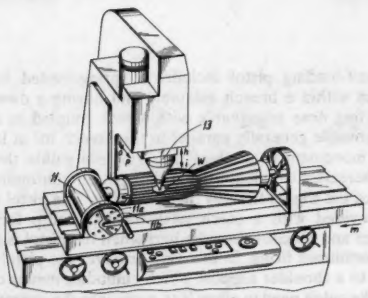
Karl Butter, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Ottobrunn near Munich, Germany

Filed Aug. 21, 1969, Ser. No. 852,121

Claims priority, application Germany, Aug. 21, 1968, P 17 51 938.9

Int. Cl. B23c *3/28*; F02k *11/00*

U.S. Cl. 90—11 C **1 Claim**



Longitudinally extending coolant channels are formed by means of a cutting tool in a monolithic tubular wall section used as the convergent-divergent thrust nozzle for a rocket engine combustion chamber. The width of the channels at particular locations along their length is established in inverse relationship to the amount of heat to be removed from the combustion chamber at that location. In forming the coolant channels their side wall planes are established and radial planes of the tubular wall section are formed in parallel relationship with the side wall planes. The cutting tool is aligned in the radial planes and then is displaced laterally into the side wall planes for cutting the channels. The number of passes required for the cutting operation depends on the width of the tool and the width of the channel which varies over the length of the combustion chamber.

3,678,803

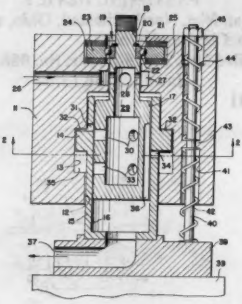
HYDRAULIC SONIC OSCILLATOR

Otto K. Schwenzfeier, Chula Vista, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Aug. 25, 1969, Ser. No. 852,839

Int. Cl. F15b *2/02*, *11/08*

U.S. Cl. 91—39 **6 Claims**



There is disclosed a linear hydraulic oscillator in which the control valve is positioned in the center of a double-acting piston directly adjacent the pressure chambers to provide a short circuit flow of pressurized fluid directly to and from the pressure chambers.

3,678,804

AXIAL-PISTON MACHINE

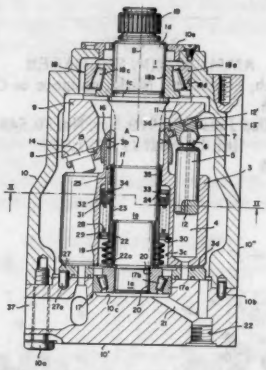
Walter Heyl, Klein-Umstadt, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Aug. 31, 1970, Ser. No. 68,254

Claims priority, application Germany, Sept. 8, 1969, P 19 45 434.3

Int. Cl. F01b *13/04*

U.S. Cl. 91—507 **9 Claims**



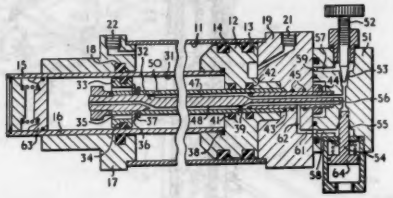
An axial-piston machine in which the cylinder drum is rotatably entrained with a shaft extending through this drum while means enables relative axial displacement of shaft and drum. A stack of BELLEVILLE washers is seated against the lower shaft bearing and acts via a plurality of angularly spaced pins on a swivel cap which, in turn, engages a disk holding the piston shoes against an inclined control surface surrounding the axis of the shaft. The cylinder drum is applied by a further spring against a fluid-distribution surface, this spring being seated at least in part against a perforated disk through which the force-transmitting pins or rods extend.

3,678,805

PNEUMATIC CYLINDER ASSEMBLIES

Henry Walter Weyman, Waterworks Road, Worcestershire, England

Filed Oct. 22, 1970, Ser. No. 83,098
Claims priority, application Great Britain, Nov. 25, 1969, 57492
Int. Cl. F15b *15/22*
U.S. Cl. 92—11 3 Claims



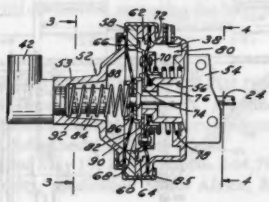
A pneumatic cylinder assembly incorporating hydraulic damping, said assembly comprising a pneumatic cylinder, a pneumatic piston slidable within said cylinder and a pneumatic piston rod operatively connected to said pneumatic piston, and a hydraulic damping cylinder assembly incorporating a hydraulic cylinder arranged within the pneumatic piston rod, a hydraulic piston within said hydraulic cylinder and a hydraulic piston rod operatively connected to said hydraulic piston and secured to an end wall of said pneumatic cylinder remote from said pneumatic piston rod.

3,678,806

DUAL DIAPHRAGM DISTRIBUTOR

Frank M. Kittredge, Temperance, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 858,567, Sept. 11, 1969, Pat. No. 3,599,614. This application Sept. 18, 1970, Ser. No. 29,360
Int. Cl. F01b *19/00*
U.S. Cl. 92—48 8 Claims



A vacuum motor having two independently mounted and movable flexible diaphragms mounted in a common housing and partitioning the housing into fluid chambers, one of the diaphragms having a limited movement and at times limiting the movement of the other diaphragm, the other being connected to a means to be actuated.

3,678,807

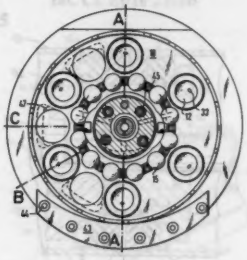
PISTON MOTOR WITH SWASH-PLATE ENGINE ASSEMBLY

Hermann Ernst Robert Papst, Karl-Maier Strasse 1, St. Georgen, Black Forest, Germany

Filed Dec. 29, 1969, Ser. No. 888,382
Int. Cl. F01b *3/00*
U.S. Cl. 92—70 20 Claims

The invention deals with a basic improvement of piston motors with swash-plate engine assembly by achieving through a novel construction of the swash-plate engine assembly both an even distribution of the piston forces (combustion pressure peaks) on the hitherto very variably stained bearing elements between the wobble ring and swash plate as well as a considerable reduction of the mass forces, which, if followed by an increased useful life, makes possible considerably higher operational r.p.m.'s, therefore also a higher specific weight (unit power) than in the case of the arrangements known hitherto. The advantageous shaping of the bearing elements likewise contributes to this.

The arrangement according to the invention of the shaft with the swash plates, inclusive of the most simple and spatially compact conditions, will not permit the combustion forces to act either on the housing walls for the purpose of sound radiation nor on the shaft bearing, not will it permit them to reach the outside via the connecting shaft.

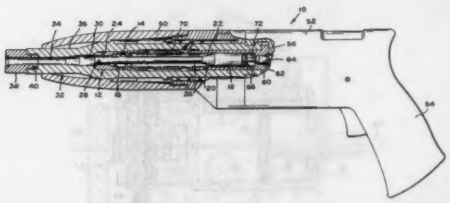


3,678,808

ENERGY DISSIPATING MECHANISMS

Yung Shing Hsu, Lewiston, Idaho, and Raymond V. Pomeroy, Portland, Oreg., assignors to Omark Industries, Inc., Portland, Oreg.

Continuation of Ser. No. 796,980, Feb. 6, 1969, abandoned. This application Dec. 9, 1970, Ser. No. 96,633
Int. Cl. F01b *11/02*
U.S. Cl. 92—85 5 Claims



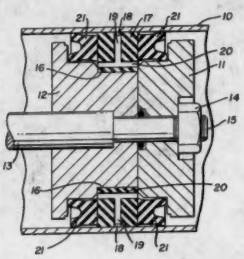
Energy dissipating mechanisms 10 (FIGS. 1 and 2) and 110 (FIG. 3) include stops 12 and 112 of hard metal having long, cylindrical bores 14 and 114 at the entrance ends of frustoconical die portions 16 and 116 and serving to receive and guide enlarged heads 18 and 118 of plungerlike members 20 and 120 having softer, extrudable, frustoconical portions 22 and 122. The stop 112 is free to float laterally in a counterbore 142 in a separable muzzle 127 attached to a barrel 132.

3,678,809

VENTED PISTON BEARING FOR HYDRAULIC PISTON AND CYLINDER ASSEMBLIES

Kingsley A. Doutt, Alpena, Mich., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Feb. 16, 1970, Ser. No. 11,663
Int. Cl. F01b 31/00; F16j 9/00
U.S. Cl. 92—86 6 Claims



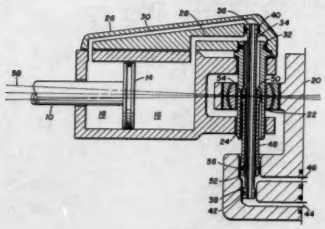
A vented piston bearing for hydraulic piston and cylinder assemblies wherein the piston bearings comprise annular members carried on the pistons and engageable with the cylinder wall. The piston bearing is provided with a plurality of transverse openings therein extending to the areas in which the piston seals are located and the piston bearing is provided with a plurality of radially positioned vent passageways communicating with the transverse openings. Hydraulic fluid passing the piston seals is thereby vented through the piston bearing rather than extruding the piston seals from their normal locations.

3,678,810

ROTATIONAL COUPLING

Lloyd H. Holmes, Arlington, and William D. Sundland, Dallas, both of Tex., assignors to LTV Electrosystems, Inc., Greenville, Tex.

Filed June 4, 1970, Ser. No. 43,433
Int. Cl. F01b 15/04; F16l 47/00, 39/00
U.S. Cl. 92—119 7 Claims



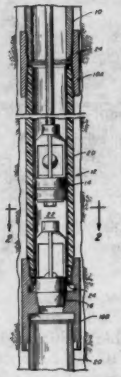
A concentric arrangement of two transfer tubes provides dual fluid flow channels between a supporting housing and a movable actuator. Each of the two transfer tubes is flexibly sealed both in the supporting housing and the movable actuator. The two concentric transfer tubes thus provide a rotational coupling between the fixed support and an actuator having rotational freedom about more than a single axis.

3,678,811

OIL WELL PUMP WORKING BARREL

James T. Penwell, Rte. 1, Box 45, Chelsa, Okla.

Filed May 28, 1970, Ser. No. 41,367
Int. Cl. F04b 39/12
U.S. Cl. 92—169 3 Claims



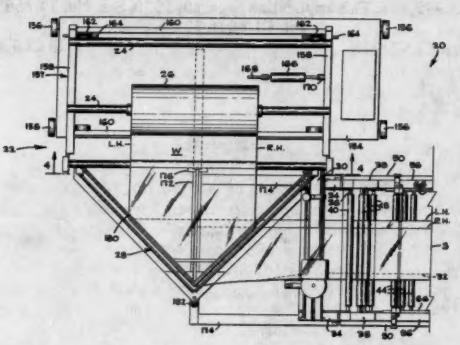
A pumping well working barrel includes an outer polyvinyl chloride sleeve and an inner liner of stainless steel.

3,678,812

BAG MACHINE

Robert J. Wech, Pinecrest Road R.R. 5, Green Bay, Wis.

Division of Ser. No. 760,048, Sept. 16, 1968. This application Sept. 1, 1971, Ser. No. 176,900
Int. Cl. B31b 37/26
U.S. Cl. 93—20 3 Claims



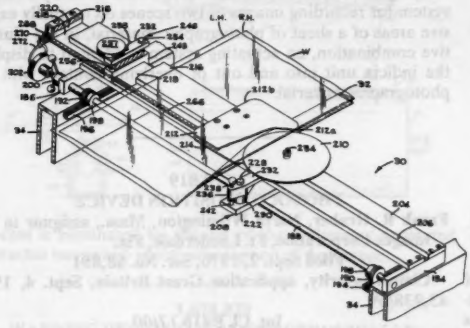
The bag machine of the present disclosure is of the type which can produce bags made of various thermoplastic sheet material and can be adapted to make side weld or bottom weld bags. The following description will, however, be confined to the production of side weld bags.

A roll of plastic web is mounted on an unwind stand and traverses a folding board constraining the web to fold along its longitudinal median or along a line spaced from and parallel to the longitudinal median in the event it is desired to produce wicketed bags having a lip with a pair of holes in which is inserted a U-shaped wire called a wicket. Downstream of the folding board a gusseter is provided to produce a fold which permits greater expansion at the bottom of the bag. The folded and gusseted web thence comes under the influence of a reciprocating transversely disposed seal and cutter bar which divides the web, at longitudinally spaced intervals, to produce individual bags. The bags are then transported to a table which is provided with devices for arranging the bags into a stack.

3,678,813
BAG MACHINE

Robert J. Wech, Pinecrest Road, R.R. 5, Green Bay, Wis.

Division of Ser. No. 760,048, Sept. 16, 1968. This application Sept. 1, 1971, Ser. No. 176,898
Int. Cl. B31b *37/26*
U.S. Cl. 93—20 6 Claims



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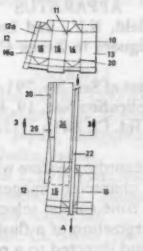
3,678,814
METHODS AND APPARATUS FOR FOLDING SHEETS

Jacob Teunis Teunissen Van Manen, Johannesburg, South Africa, assignor to Conical Containers Company (Proprietary) Limited, Johannesburg, South Africa

Filed May 19, 1971, Ser. No. 144,783
Claims priority, application South Africa, May 19, 1970, 70/3381
Int. Cl. B31b *1/26*
U.S. Cl. 93—49 M 8 Claims

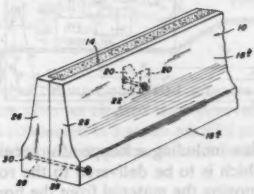


A method for folding a moving sheet along a fold line which is angled relatively to the direction of movement of the sheet is disclosed. The moving sheet is passed and folded over a round rod having its longitudinal axis parallel to the direction of movement of the sheet. An apparatus for carrying out this method is also disclosed.

3,678,815
CONCRETE STRUCTURAL MEMBER

George C. Younker, 301 Nittany Drive, Monroeville, Pa.

Filed Aug. 27, 1970, Ser. No. 67,396
Int. Cl. E01c *23/16*
U.S. Cl. 94—1.5 16 Claims

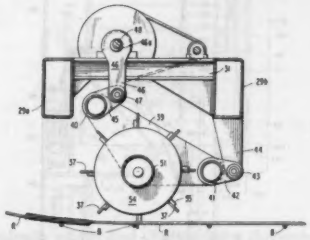


A concrete structural member and method of forming same is disclosed. The member, which may be used in forming roadway and bridge guard rails, median barriers and the like, includes a pair of identically shaped, pre-cast, outer face members or shells spaced from each other with their inner faces confronting each other. The outer surface of each shell has a contour which, when the members are together, defines the desired structural shape. A core of solid material, such as concrete, is bast between the shells to thereby form a composite integral structure with the shells.

3,678,816
APPARATUS FOR INSTALLING REINFORCING IN PLASTIC CONCRETE

Michael I. Hudis, Brookfield, Wis., assignor to Rex Chainbelt Inc., Milwaukee, Wis.

Filed April 13, 1970, Ser. No. 27,702
Int. Cl. E01c *19/00*
U.S. Cl. 94—39 10 Claims

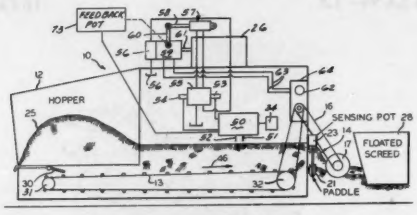


A concrete roadway paving machine is provided with several transversely arranged freely rotatable paddle wheels which oscillate vertically and ride over the mesh or rod reinforcing to depress the same into the plastic concrete to the desired depth. Where lateral positioning of longitudinal rods is required, the paddles or blades are provided with notches or teeth having related angular edges whereby the oscillation progressively shifts the rods to their correct positions.

3,678,817
MATERIAL CONTROL SYSTEM FOR A FINISHING MACHINE

Earl D. Martenson, North Aurora, and James J. Gebhardt, Jr., Lisle, both of Ill., assignors to Barber-Gaeine Company, Aurora, Ill.

Filed Jan. 27, 1969, Ser. No. 794,026
Int. Cl. E01c *19/48*
U.S. Cl. 94—46 26 Claims

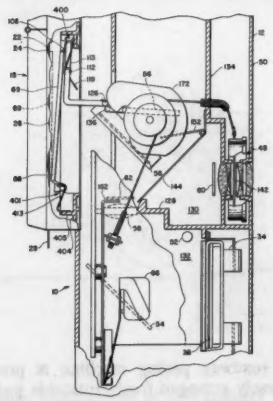


A machine including a hopper for receiving a quantity of material which is to be delivered to the road surface, a conveyor for moving the material from the hopper along the axis of the machine to a pre-work station, a flow control gate associated with the hopper to control the amount of material delivered to the conveyor, a sensor connected to the machine and positioned at the pre-work station for sensing the material demanded at the pre-work station in relation to the actual amount of material being delivered to the pre-work station, a circuit connected between the sensing means and the delivery means for controlling either the speed of the conveyor or the gate associated with the hopper for controlling the amount of material delivered to the pre-work station in accordance with the amount present.

3,678,818
PHOTOGRAPHIC APPARATUS INCLUDING REMOVABLE VALIDATION PLATE

Donald E. Moodie, Nashua, N.H., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 5, 1970, Ser. No. 78,033
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 26 Claims

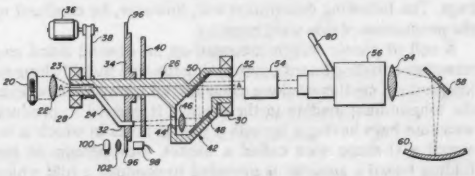


A removably mounted indicia unit in a camera system for making identification cards, adapted both to form an image of a subject on a sheet of photographic material and to reproduce indicia of the indicia unit, such as a validating signature, on the same sheet of photographic material. The indicia unit has a substantially light transparent plate carrying the indicia and is located at the rear of the camera. The indicia unit, in assembly in the camera system, uses a nesting assembly at one end of the unit and a resilient snap-in assembly at the other end of the unit. In illustrative embodiment, the indicia is in combination in a system for recording images of two scenes on mutually exclusive areas of a sheet of photographic material, in which system the indicia unit includes substantially light transparent polarizer filter elements as a part of the system for recording images of two scenes on mutually exclusive areas of a sheet of photographic material. In the illustrative combination, an actuating system is adapted to displace the indicia unit into and out of overlying contact with the photographic material.

3,678,819
PHOTOCOMPOSITION DEVICE

Frank R. Gruber, North Wilmington, Mass., assignor to The Imagex Corporation, Ft. Lauderdale, Fla.

Filed Sept. 2, 1970, Ser. No. 68,851
Claims priority, application Great Britain, Sept. 4, 1969, 43,938/69
Int. Cl. B41b *17/00*
U.S. Cl. 95—4.5 R 8 Claims



The device is a photocomposition system in which a font of transparent characters is disposed along a circular path in a plane and a light pipe is mounted for rotation with one end of the pipe on the axis of rotation and the other end positioned to trace out a path parallel to the font of characters. A periscopic system is mounted for fixed rotation with the light pipe, one end of the periscope being positioned to the side of the font opposite the light pipe, the other end being on the axis of rotation. The optical system is provided for varying the magnification of images from the axial end of the periscope, while providing continuous base line adjustment for the magnified characters.

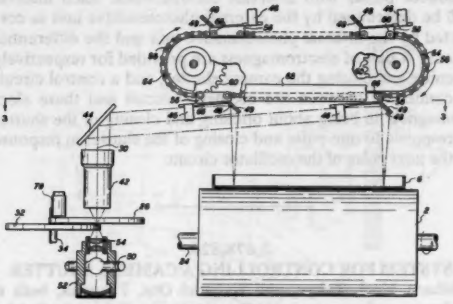
3,678,820
OPTICAL SYSTEM FOR PROJECTION RECORDING APPARATUS

Philip L. Chen, Penfield, N.Y., and Louis F. Paradysz, East Randolph, Vt., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 791,044, Jan. 14, 1969, abandoned. This application Nov. 19, 1970, Ser. No. 91,156
Int. Cl. B41b *21/22*
U.S. Cl. 95—4.5 3 Claims

An alphanumeric recording system wherein a character disc having transparent character images thereon is rotated through an exposure zone so that selected characters may be projected by the energization of a flash lamp. The projected image is collimated and directed to a recording zone through which move lens-mirror units at a constant speed to intercept the projected image and focus it onto a photoreceptive recording medium. The character disc rotates at a rate such

that with the slits therein associated with respective characters inter-character spacing is assured. Dead time in the recording



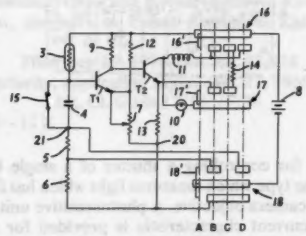
process is eliminated by the use of the collimated projected character image and plural interception of that image.

3,678,821

WARNING DEVICE FOR AN ELECTRONICALLY CONTROLLED CAMERA SHUTTER

Kiyoshi Kitai, Tokyo, Japan, assignors to Kabushiki Kaisha Hattori Tokeiten, Tokyo, Japan

Filed April 13, 1970, Ser. No. 27,819
Int. Cl. G03n *17/20, 9/62*
U.S. Cl. 95—10 CE 11 Claims



A warning device is provided for use with a camera having a variably settable iris aperture and an electronically controlled shutter mechanism. The warning device provides a warning signal indicative of either an overexposure or underexposure condition for each particular iris aperture setting. The warning device comprises a warning lamp which is sequentially placed in a plurality of different electric circuits in response to the movement of a sequential switching mechanism. The movement of the sequential switching mechanism is coordinated with the movement of the release lever of the camera shutter mechanism so that an indication of either an overexposure or underexposure condition is given prior to the actuation of the release lever.

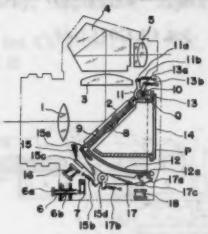
3,678,822

SHUTTER MECHANISM CONTROL CIRCUITRY

Hiroshi Ueda, Nara; Kintaro Yata, Ikeda, and Motonobu Matsuda, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed June 2, 1970, Ser. No. 42,726
Claims priority, application Japan, June 10, 1969, 44/45545; June 10, 1969, 44/45546
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT 9 Claims

At least two timing circuits, one of which is responsive to the light intensity of the object and another of which is set at a fixed delay, are actuated simultaneously to control the opening and closing of a shutter or curtain mechanism in a through-the-lens type measuring system. One of the timing circuits is used to open the shutter mechanism and another timing circuit controls the closing of the shutter mechanism. A third timing circuit may be added which has a constant delay equal



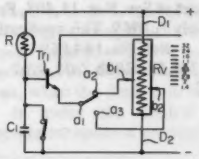
to that of the another timing circuit and actuates the shutter opening mechanism after an elapsed time interval. The three timing circuits are connected in a series-parallel manner to effect the proper addition and subtraction of their respective time intervals.

3,678,823

ELECTRONIC SHUTTER FOR THROUGH-THE-LENS CAMERA HAVING INTERCHANGEABLE LENSES OF DIFFERING APERTURE

Takayoshi Sato, Tokyo, Japan, assignor to Kabushikikaisha Copal, Tokyo, Japan

Filed Nov. 5, 1970, Ser. No. 87,148
Claims priority, application Japan, Nov. 14, 1969, 44/91711
Int. Cl. G03b *7/08, 9/62*
U.S. Cl. 95—10 CT 6 Claims



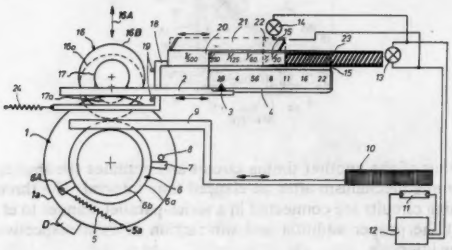
An electronically controlled shutter for a through-the-lens camera which is designed for use with interchangeable lenses of differing maximum aperture. The shutter includes an integrating circuit having a light sensitive device and a capacitor, connected to the base of a transistor, which is gated on for a reference time interval proportional to the intensity of received light. To compensate for lenses having a different maximum aperture, the circuit includes a resistor having a sliding tap, connected to the emitter of the transistor, and which is physically moved by a pin on the interchangeable lens. Thus, the bias on the transistor is altered to compensate for the different exposure calculation required by each lens.

3,678,824

PHOTOGRAPHIC APPARATUS WITH INDICATING MEANS FOR SELECTED EXPOSURE TIME AND APERTURE SIZE

Helmut Durr, Karneidplatz 12, Munich, Germany

Filed Dec. 22, 1970, Ser. No. 100,674
Claims priority, application Germany, Dec. 23, 1969, P 19 64 689.0
Int. Cl. G01j 1/44
U.S. Cl. 95—10 CE 14 Claims



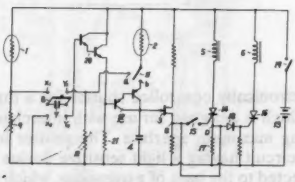
A camera wherein a setting ring is rotatable by hand to select a desired aperture size and simultaneously moves a pointer with reference to an *f*-stop scale. An exposure time scale is movable along the *f*-stop scale together with a filter which influences the admission of light to a photoelectric receiver in an exposure time selecting circuit which causes a lamp to light up when the exposure time is too long for the making of exposures with the camera held by hand. The filter is also moved in response to rotation of the setting ring to thus influence the selection of exposure time as a function of the selected aperture size. If the user wishes to determine that exposure time which is automatically selected in response to selection of a particular aperture size, the exposure time scale is moved with the filter until the lamp lights up. The graduations of the exposure time scale then register with appropriate graduations of the *f*-stop scale and the user can look through the view-finder window to see that graduation of the exposure time scale which registers with the graduation representing the selected aperture size.

3,678,825

AUTOMATIC EXPOSURE CONTROLS FOR CAMERAS

Tsukumo Nobusawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of Ser. Nos. 11,405, Feb. 16, 1970, and Ser. No. 839,535, July 7, 1969. This application May 19, 1971, Ser. No. 144,869
Int. Cl. G03b 7/08, 9/62
U.S. Cl. 95—10 CT 10 Claims



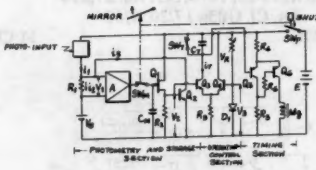
A camera for determining automatically the exposure time during which a shutter of the camera remains open. The camera has external photosensitive units respectively receiving light which is external to the camera objective and which has passed through the camera objective into the interior of the camera. A differential circuit interconnects these photosensitive units for correcting the output of the external unit according to the light received by the internal unit. An oscillator circuit is connected to the external photosensitive unit to be operated thereby, and this oscillator circuit produces pulses with intervals therebetween. Each interval will be determined by the external photosensitive unit as corrected by the internal photosensitive unit and the differential circuit. A pair of electromagnets are provided for respectively opening and closing the camera shutter, and a control circuit is connected between the oscillator circuit and these electromagnets to bring about opening and closing of the shutter in response to one pulse and closing of the shutter in response to the next pulse of the oscillator circuit.

3,678,826

SYSTEM FOR CONTROLLING A CAMERA SHUTTER

Chiharu Mori, Tokyo, and Katsumi Ota, Fukuoka, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 10, 1971, Ser. No. 151,647
Claims priority, application Japan, June 16, 1970, 45/52140
Int. Cl. G03b 7/08
U.S. Cl. 95—10 CT 8 Claims



A system for controlling a shutter of a single lens reflex camera of the type which measures light which has first passed through the camera objective. A photosensitive unit which has a constant current characteristic is provided for measuring light from the object which has passed through the objective. The photoelectric current of this unit provides for a control transistor a collector current which is substantially equal to the photoelectric current, so that the control transistor will have a base-emitter voltage corresponding to the collector current and thus to the intensity of the light received by the photosensitive unit. This base-emitter voltage is then used in the subsequent determination of an exposure. A holding circuit is provided for maintaining the base-emitter voltage of the control transistor, and an amplifier is electrically connected with the holding circuit and forms with the latter and with the transistor and photosensitive unit a closed loop automatic control circuit.

3,678,827

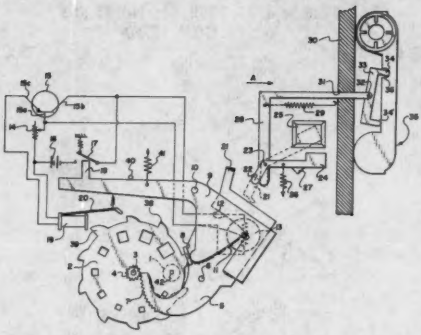
MEANS FOR ADJUSTING CAMERA LOW-LIGHT SIGNAL IN ACCORDANCE WITH FILM EXPOSURE LATITUDE

John H. Eagle, deceased, late of Irondequoit, N.Y.; by Lee A. Eagle, executrix, Irondequoit, N.Y., and Lincoln Rochester Trust Company, executor, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 20, 1969, Ser. No. 835,316
Int. Cl. G03b 7/12
U.S. Cl. 95—10 CD 2 Claims

A device is provided for adjusting a camera low-light-signal mechanism in accordance with the exposure latitude of film

received in the camera. The device senses an exposure-latitude code on the film cartridge and adjusts the low-light-



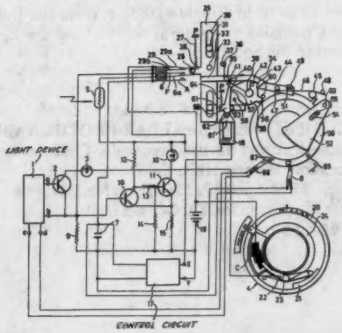
signal mechanism to energize the low-light signal only when appropriate for film of the indicated exposure latitude.

3,678,828

EXPOSURE CONTROL DEVICE FOR A CAMERA

Yukio Mashimo, Tokyo, and Mitsuo Ishikawa, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1970, Ser. No. 82,874
Claims priority, application Japan, Oct. 27, 1969, 44/85827
Int. Cl. G03b *17/18, 17/20*
U.S. Cl. 95—11 R **12 Claims**



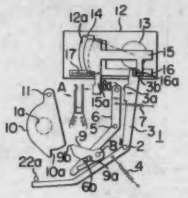
An exposure control device for a camera comprising: an electronic shutter control device for shutter actuation, a brightness indicator circuit for indicating and warning insufficient brightness of an object being photographed, and exposure measuring circuit connectable to said brightness indicator circuit and flash ready indicator for a flash exposure, whereby an indicator in said brightness indicator circuit instructs a camera operator to use a flash device and said flash indicator assures camera operator to get a correct flash exposure.

3,678,829

AUTOMATIC FLASH SELECTION DEVICE FOR CAMERAS

Hirokazu Kaneko, Tokyo, Japan, and Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1970, Ser. No. 98,991
Claims priority, application Japan, Dec. 18, 1969, 44/101259
Int. Cl. G03b *15/03, 7/08, 7/14*
U.S. Cl. 95—11 R **1 Claim**



An automatic flash selection device for use with fully automatic exposure setting cameras comprising an exposure meter pointer, stopper plate and a coacting detector plate which are displaced in response to the actuation of the shutter release, a distance proportional to the angle of rotation of the pointer in that the plates are blocked during their displacement by the pointer when its angle of rotation is less than a predetermined angle, but are displaced to the full length of their strokes when the angle is beyond a predetermined angle; a pivoted first lever coupling the detector plate and the shutter stop mechanism; a pivoted intermediate lever rotated by the first lever and coupled to the shutter speed selection lever; a focusing cam operated by the focusing mechanism and a pivoted third lever abutting the intermediate lever and the shutter stop mechanism. When there is adequate light on the subject, the first lever controls the shutter stop mechanism in response to the proportional displacement of the detector plate. However, when there is insufficient light, the detector and stopper plate will pass through their full displacement, rotating the first and intermediate levers through a greater range, such that the third lever is disconnected from engagement with the intermediate lever and switches control of the shutter stop mechanism from the first lever to the focusing cam, while the stopper plate actuates a warning light in the flash equipment and the shutter speed selection lever is moved to a position causing the shutter speed mechanism to be operated at a low shutter speed. Thus, when the flash is to be used, the shutter stop mechanism is under the control of the focusing mechanism and the shutter speed is appropriately lowered.

3,678,830

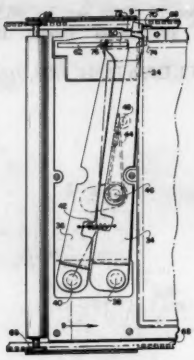
PHOTOGRAPHIC APPARATUS

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1970, Ser. No. 318
Int. Cl. G03b *17/52*
U.S. Cl. 195—13 R **22 Claims**

A processing chamber drives an element for engaging an exposed film unit to move the exposed film unit from an exposure position to an intermediate position. At least one relatively thin pivotable arm operates a slide carrying a pick element, the arm being actuated by a translationally reciprocable processing chamber during the initial portion of its travel. An

exposed film unit is thereby transported from an exposure position to a position where the exposed film unit engages



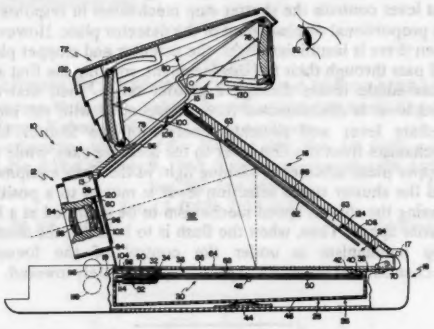
pressure-applying members that distribute a processing composition across the exposed photosensitive element.

3,678,831

COMPACT FOLDING REFLEX CAMERA

James G. Baker, Middlesex, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 10, 1971, Ser. No. 141,552
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **17 Claims**



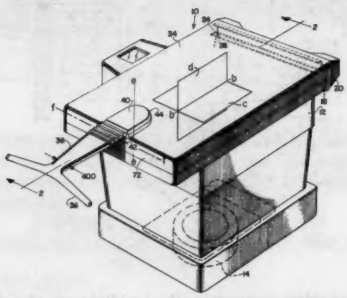
A compact, folding reflex camera formed by a plurality of housing sections and a thin walled, light opaque, flexible envelope, coupled together for relative movement between folded and extended positions. When the camera is extended, the envelope forms a chamber, within the extended housing sections, having openings therein through which light is selectively transmitted during viewing and exposure modes of operation. In the viewing mode of operation, one of the openings functions as part of the camera's optical system by forming an entrance pupil for a viewing device, mounted on one of the housing sections, which is adapted to permit viewing of an image formed within the chamber.

3,678,832

PHOTOGRAPHIC APPARATUS HAVING A HANDLE FOR EFFECTING FILM PROCESSING

Milton S. Dietz, Lexington, and Frederick M. Finnemore, North Reading, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 25, 1970, Ser. No. 75,565
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **28 Claims**



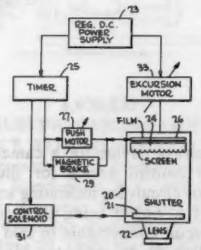
Photographic apparatus effective for spreading a processing fluid across a sheet of photographic material as said sheet is manually withdrawn through an opening of the apparatus includes a handle which precludes relative motion of the apparatus housing with respect to the handle around an axis parallel to a preferred direction of film withdrawal so as to maintain a fixed orientation around this axis to facilitate grasping of film portions prior to withdrawal while providing other rotational degrees of freedom of the housing for self-alignment of it in the direction of withdrawal. The handle is a torsion-resistant member having a hand grip at one end and pivotally affixed at its other end to the housing by a pivot shaft located close to a longitudinal axis of the housing which extends through the opening, and the handle includes a hinge positioned intermediate the hand grip and the pivot shaft and disposed with its hinge axis perpendicular to the pivot shaft axis. Additionally, the pivotal motion of the handle is restrained so as to invitingly extend it from the housing, and the handle includes an integral self-locking arrangement for attachment to the housing.

3,678,833

COMPRESSED PARALLAX PHOTOGRAPHY

Sam L. Leach, Palos Verdes Peninsula, Calif., assignor to Pid Corporation, Beverly Hills, Calif.

Filed April 17, 1968, Ser. No. 721,984
Int. Cl. G03b *35/10*
U.S. Cl. 95—18 **8 Claims**



A method and apparatus is disclosed which utilizes a novel compressed parallax photographic technique to create pictorial parallax panoramagrams having an illusion of depth. A

traversing camera having an objective lens means and an optically transparent lenticular screen disposed above the film is caused to traverse an arcuate path about the object to be photographed. The arcuate excursion distance is greatly enlarged over the distances utilized in prior art techniques and the camera, rather than continuously photographing the object throughout the arcuate excursion, photographs the object only at sampled locations along its arc of excursion. The film in the camera is advanced only when the camera is taking a photographic sample. The inventive technique is such that a much greater degree of parallax can be obtained without any loss of resolution and fidelity of the photographic image.

3,678,834

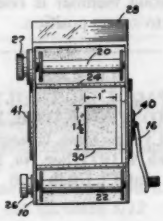
REVERSIBLE FILM CAMERA WITH SELECTABLE EXPOSURE SIZES

Dominic S. Melillo, 129 Marmora Road, Parsippany, N.J.

Filed June 4, 1971, Ser. No. 149,943

Int. Cl. G03b *17/14*

U.S. Cl. 95—36 **12 Claims**



A camera and film are adapted to provide an increased number of exposures of selectable sizes. A plurality of fixed aperture internal masks provide selected image frame sizes and permit exposures along two separate rows across the width of the film. The paper film leader and spools are symmetrical to permit reversal of a roll of film after completing the first row of exposures. The roll is then reinserted for successive winding of the second row from the opposite end. External viewing masks of different sizes corresponding to the internal masks are provided. Two separate film advancing controls with automatic stop means may be mounted on opposite sides of the camera to accommodate selection of four different sizes and numbers of exposures. An interchangeable crank handle may be used to engage the winding mechanism from either side to advance the film, and exposure counters on both sides of the camera indicate the advance of each frame along each row of the film corresponding to the selected size.

3,678,835

AUTOMATIC FOCUSING DEVICE FOR CAMERAS AND THE LIKE

Yoshiyuki Takishima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

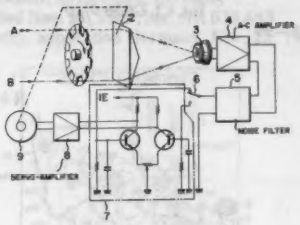
Filed Aug. 12, 1970, Ser. No. 63,059

Claims priority, application Japan, Aug. 20, 1969, 44/65819

Int. Cl. E01c *19/12*, *19/48*, *23/06*

U.S. Cl. 95—44 R **11 Claims**

Automatic focusing device for a camera has a chopper and a separator. The chopper is located in front of a deflecting device for directing two different light beams on a common photoelectric effect element. The separator is to separate into



two signals the output of the photoelectric effect element which are amplified by a single AC amplifier. The separator is synchronized with the chopper.

3,678,836

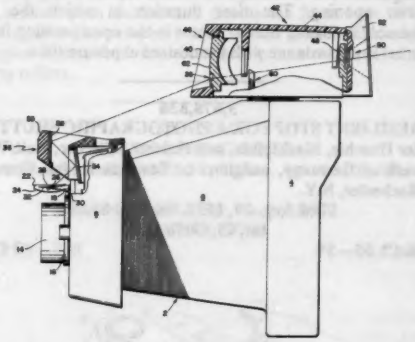
RANGING AND FOCUSING METHOD AND APPARATUS

Milton S. Dietz, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 29, 1970, Ser. No. 50,635

Int. Cl. G03b *13/20*

U.S. Cl. 95—45 **46 Claims**



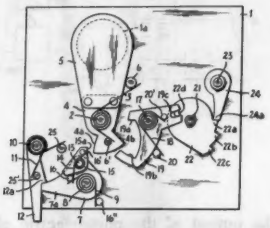
A fluid-filled chamber **24** connected to the housing of the camera and is provided with a bubble **28**, globule, or the like, moveably disposed therein. The viewfinder of the camera is provided with a fiducial mark which is brought into alignment with that portion of the subject intersecting the plane on which the photographer is standing. This action will cause a tilting of the camera from a horizontal position, effecting movement of the bubble, globule, or the like, with respect to a reference. The distance between the bubble, globule, or the like, and such reference is varied by adjusting the focus of the camera such that the camera will be properly focused when the reference and the bubble, globule, or the like, are coincident. In one embodiment, the reference line is mounted in the chamber and a cam **16**, mounted on the lens, pivots the chamber as the lens is focused. In another embodiment, the cam is replaced with a spiral reference mark so that the reference mark moves as the lens is focused. In another embodiment, for a reference point, plural contacts are positioned partially within the chamber and an electrically conductive globule is in the chamber. When the globule touches both contacts, a circuit is closed and a small light in the viewfinder is energized to indicate correct focus.

3,678,837

EXPOSURE TIME CONTROL DEVICE FOR A CAMERA SHUTTER MECHANISM

Kiyoshi Kitai, 54 Tomihisa-cho, Shinjuku-ku, Tokyo, Japan

Filed April 13, 1970, Ser. No. 27,679
Int. Cl. G03b 9/10
U.S. Cl. 95—59 11 Claims



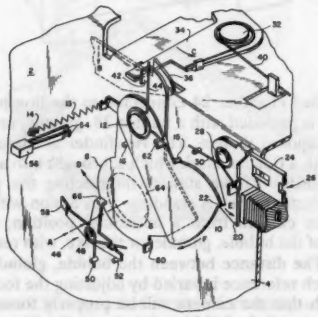
A camera having a shutter sector movable over and away from a shutter opening is provided with a variably settable holding means to releasably hold the opening is provided with a variably settable holding means to releasably hold the shutter sector in an open position away from the shutter opening for a preselected time duration. The shutter sector is always moved through nearly the same distance to effect an opening of the shutter opening regardless of the exposure time desired. The holding means comprises a lever which is moved into releasable engagement with the shutter sector by the shutter sector itself during its movement to the open position. The lever is moved out of engagement with the shutter sector after a predetermined time period by the action of a biasing spring afterwhich the shutter sector is rapidly moved over the shutter opening. The time duration in which the lever releasably holds the shutter sector in the open position is variable set in accordance with the desired exposure time.

3,678,838

RESILIENT STOP FOR A PHOTOGRAPHIC SHUTTER

Peter Huschle, Marktplatz, and Helmut Ettischer, Ruit/Wurtt, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,036
Int. Cl. G03b 9/10
U.S. Cl. 95—59 3 Claims



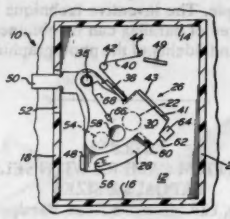
Shutter mechanism for a photographic camera in which a shutter blade is opened by a spring loaded impact driver controlled by a shutter release lever. When the blade is driven open it strikes a resilient stop which absorbs the impact energy of the shutter blade and returns the shutter blade softly for engagement by a latch device. The impact energy imparted by the blade to the resilient stop can be employed for various functions, such as the actuation of a switch in an electronic timing circuit that controls shutter speed.

3,678,839

INEXPENSIVE CAMERA

David E. Michaelis, Levittown, Pa., assignor to Plastics Development Corporation of America, Philadelphia, Pa.

Filed July 15, 1970, Ser. No. 55,128
Int. Cl. G03b 9/26
U.S. Cl. 95—60 8 Claims



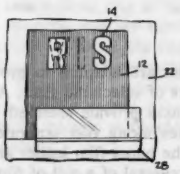
An inexpensive camera is disclosed utilizing a simple shutter on a housing made from a material such as injected molded plastic. The housing lacks a back wall so that the film cassette will temporarily provide a back wall for the housing. The shutter comprises a first member and a second member which rotate together from a rest position to a cocked position at which point the second member is released from the first member and returns to its rest position.

3,678,840

NON-OPAQUE, LIGHT-FILTERING PHOTOTYPOGRAPHIC FONT

Henry Goldman, 35 Cypress Lane, Orangeburg, N.Y.

Filed Feb. 9, 1971, Ser. No. 113,991
Int. Cl. G03b 9/06
U.S. Cl. 95—85 4 Claims



A phototypographic font of image characters comprising a non-opaque, light-filtering background area and a series of clear image characters formed in the non-opaque background area.

3,678,841

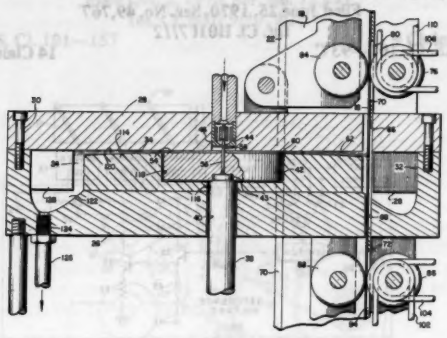
SYSTEM FOR PROCESSING PHOTOGRAPHIC MATERIAL

Edward F. Burke, Jr., Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed April 24, 1970, Ser. No. 31,630
Int. Cl. G03d 5/04
U.S. Cl. 95—89 R 24 Claims

A disc is mounted for rotation within a processing chamber which terminates in a toroidal fluid collecting chamber. Processing fluid is fed onto the spinning disc from which it is discharged radially in an atomized spray. A sheet of exposed photographic material is advanced through the processing chamber and the fluid spray generated therein while being disposed concentrically of the rotating disc. Air movement within the processing chamber is suppressed by a pair of members extending radially from the disc in closely spaced relationship on respective sides of the fluid spray and by baffle

plates positioned around the fluid collecting chamber. Two pairs of cooperating rollers positioned on each side of the



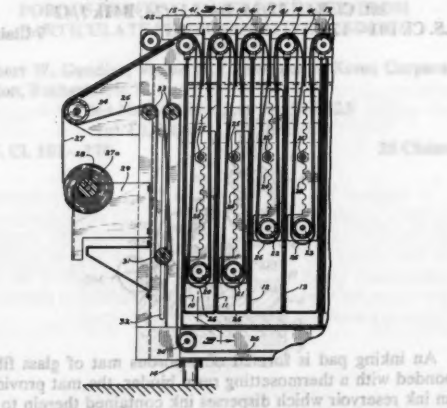
processing chamber serve to advance the sheet of material through that chamber while maintaining its proper alignment.

3,678,842

METHOD AND APPARATUS FOR PROCESSING PHOTOGRAPHIC PRINTS

Norman C. Reid, Minneapolis, Minn., and Pako Corporation, Minneapolis, Minn.

Filed June 6, 1969, Ser. No. 831,022
Int. Cl. G03d *3/12*
U.S. Cl. 95—94 R **2 Claims**



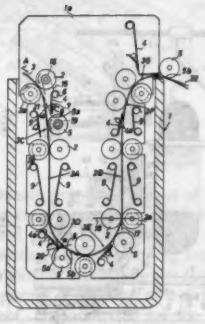
This disclosure relates to a method and apparatus for processing photographic prints which embodies a mechanism for quickly and easily varying the time of submersion of the paper in the individual developer solution tanks and which permits substantially uniform tensioning of the paper by providing means for automatically adjusting the drive friction between the paper and the driving rollers.

3,678,843

APPARATUS FOR DEVELOPING STRIPS OF PHOTOGRAPHIC FILM

Roland Kohler; Hans-Dieter Frick; Harald Fengler, and Erwin Geyken, all of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 21, 1969, Ser. No. 878,653
Claims priority, application Germany, Nov. 22, 1968, P 18 10 257.3
Int. Cl. G03d *3/12*
U.S. Cl. 95—94 R **8 Claims**



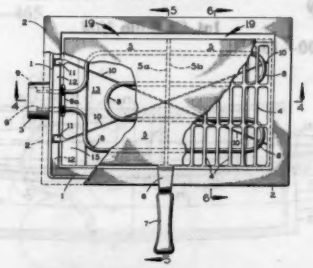
The leader of a strip of photographic film which is to advance along one or more arcuate sections of a path extending through the developing solution in a tank is first engaged by a stationary guide surface which is adjacent to the convex side of an arcuate path section and directs the front edge of the leader against the periphery of a driven guide roller which thereupon directs the leader into the nip between a pair of advancing rollers.

3,678,844

FOOD COOKING GRILL

Edward M. Marshall, 8107 S.W. 72 Ave. Apt. 102 E, Miami, Fla.

Filed July 8, 1971, Ser. No. 160,632
Int. Cl. A47j *37/06*
U.S. Cl. 99—340 **6 Claims**

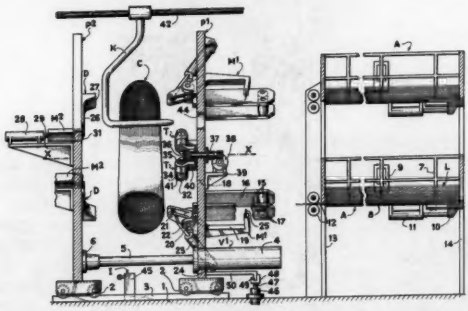


An electric grill having an enclosed casing with a foraminated grill plate in the upper end thereof with a detachable electric heating element thereunder including one or a pair of manually operable flat skillet plates for weighting food on the grill plate and cooking certain food on the top thereof. A slot at the rear of the grill plate for holding each skillet plate at two predetermined clearance angles and for holding the skillet plate in a substantially upright idle position, including a drip pan in the casing slidably positioned under the grill plate a predetermined distance from the heating element.

3,678,845
MACHINE FOR TYING UP COILS OF FILAMENT SUCH AS WIRE

Xavier Francois, Longwy-Bas; Roland Jean Venet, and Pierre Prioretti, both of Herserange, all of France, assignors to Union Siderurgique du Nord et de L'est DeLa France Par Abreviation Usinor, Paris, France

Continuation-in-part of Ser. No. 841,500, July 14, 1969, abandoned. This application May 17, 1971, Ser. No. 144,068
Claims priority, application France, July 17, 1968, 159474; July 17, 1968, 159475
Int. Cl. B65b *13/28*
U.S. Cl. 100—4 8 Claims

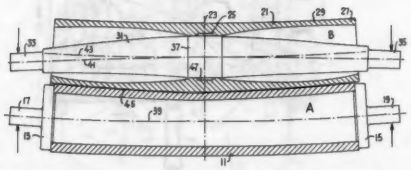


Machine for tying up a coil of metal wire and the like by means of a tie. The tie is folded about a cross-section of the coil and the end portions of the tie are bent into a hair-pin shape and the desired tension is imparted to the tie by acting on the hair-pin shaped portions. Thereafter, the hair-pin shaped portions are twisted by a twisting device, the twisting progressing in a direction from the coil cross-section to the free ends of the tie. A plurality of ties may be arranged around the coil, put under tension and twisted by a plurality of tying units. The twisted portions of the tie are disposed inside the coil.

3,678,846
ROLL PRESS COMPRISING TWO DISSIMILAR ROLLS WITH EQUAL DEFLECTION CHARACTERISTICS

Lars Gstaf Bjorkegren, Lambergsgatan 27A, 652 21 Karlstad, Sweden

Filed March 5, 1970, Ser. No. 16,891
Claims priority, application Sweden, March 7, 1969, 3141/1969
Int. Cl. B30b *3/04*
U.S. Cl. 100—155 R 4 Claims

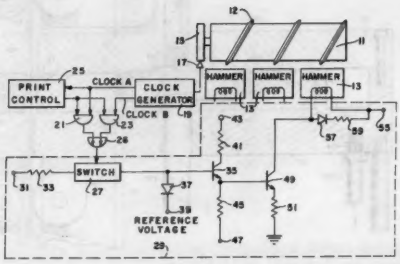


In a pair of rolls for pressing a running web, one roll has a shell supported at its ends and the other roll has a shell supported at the middle of its length by being connected to a through shaft, whereas its end portions are free of said shaft. The wall thicknesses of the shells vary along their lengths in a definite mutual relation in order to make the rolls equally flexible. Wen the first-mentioned roll has a shell of uniform thickness, the thickness of the shell of the other roll first decreases and then increases when following the shell from the middle towards the ends.

3,678,847
HAMMER FIRING SYSTEM FOR A HIGH SPEED PRINTER

Charles B. Pear, Jr., Greenlawn, and Joseph A. Ross, Fort Salonga, both of N.Y., assignors to Potter Instrument Company, Inc., Plainview, N.Y.

Filed June 25, 1970, Ser. No. 49,767
Int. Cl. H01f *7/12*
U.S. Cl. 101—93 C 14 Claims

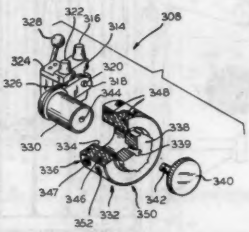


In a high speed printer the hammers are fired by first applying a firing pulse to the hammer and then applying a damping pulse to the hammer as the hammer is rebounding. The damping pulse cancels out the kinetic energy of the hammer and brings it more quickly to rest each time the hammer is fired. The firing circuit comprises a transistor having the hammer coil connected in the collector circuit thereof and a resistance in the emitter circuit thereof. When the hammer is fired the transistor is initially driven into saturation. When the transistor comes out of saturation, negative feedback provided by the resistance in the emitter circuit maintains the firing pulse current constant to the end of the firing pulse.

3,678,848
INKING PAD AND USE THEREOF

Gerhard K. Roser; Eugene J. Rebechini, both of Mount Prospect, and Guy M. Vosburg, Park Ridge, all of Ill., assignors to Weber Marking Systems, Inc., Arlington Heights, Ill.

Filed Aug. 25, 1969, Ser. No. 852,567
Int. Cl. B41l *27/26*; B41f *31/24*; B41k *1/42*
U.S. Cl. 101—125 9 Claims



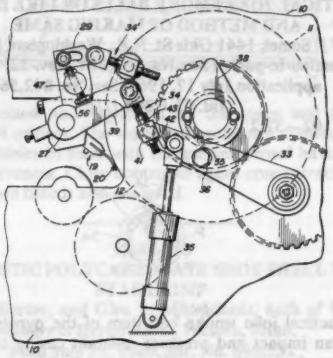
An inking pad is formed of a porous mat of glass fibers bonded with a thermosetting resin binder, the mat providing an ink reservoir which disperses ink contained therein to the surface thereof. The pad preferably also includes a cloth cover on the surface of the mat providing an inking surface on the pad. An ink applicator constitutes the inking pad and ink contained therein. An inking pad unit includes a holder for the inking pad, having structure for mounting in an inking device. An inking device includes the inking pad and means for mounting the inking pad for transmitting ink to a surface to be inked. A method of supplying ink to a surface evenly and with controlled flow of ink involves placing a surface to be inked in inking relation to the inking pad containing ink.

3,678,849

DOCTOR BLADE OSCILLATABLE BETWEEN PLATE CYLINDER AND INK TRANSFER ROLL

Ray D. Musgrave, Glenview, Ill., assignor to Western Printing Machinery Co., Schiller Park, Ill.

Filed Oct. 2, 1970, Ser. No. 77,441
Int. Cl. B41f 9/10, 9/16
U.S. Cl. 101—157 9 Claims



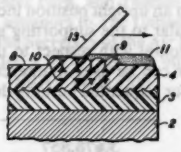
An oscillating doctor blade used in a rotary intaglio printing press having a transfer roller, a form roller and a printing plate cylinder adjacent the transfer roller, for conserving ink by scraping the excess ink off the etched or engraved surface of the printing plate and then swinging the ink-gathering face of the doctor blade so as to carry the excess ink into direct contact with the adjacent transfer roller for immediately feeding back the ink into the press inking train for use in the next inking and printing operation.

3,678,850

POROUS PRINTING PLATE PREPARED FROM PARTICULATE PHOTOSENSITIVE RESINOUS MATERIAL

Robert W. Gundlac, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed May 2, 1966, Ser. No. 546,823
Int. Cl. B41m 1/10; G03f 7/02
U.S. Cl. 101—170 20 Claims



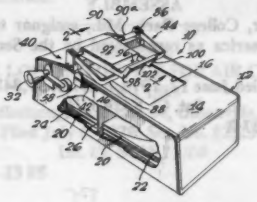
This application pertains to a porous printing plate prepared from particulate photosensitive resinuous material. Upon exposure to actinic radiation in an imagewise manner, the melting temperature of the exposed areas of the photosensitive resin is increased so that when the final plate is heat treated, the image areas maintain their porous properties. Ink is then applied and as a result of capillary action transferred upon contact from the image areas to a copy sheet.

3,678,851

IMPRINTING ATTACHMENT FOR AUTOGRAPHIC REGISTERS

Donald J. Steidinger, Barrington, and Donald H. Koepke, Elgin, both of Ill., assignors to Uarco Incorporated

Filed Jan. 12, 1970, Ser. No. 2,335
Int. Cl. B41f 3/46, 3/20
U.S. Cl. 101—260 13 Claims



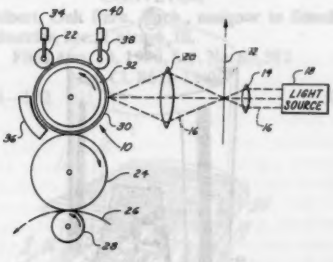
An improvement is autographic registers of the type having an open writing table area, a storage area for a supply of continuous stationery and means for advancing the continuous stationery over the writing table for writing multiple copies of a transaction and for further advancing the stationery beyond the writing table to permit separation of a written form from the remainder thereof, characterized by the provision of a card impression assembly including a card carrier slide mounted for insertion and retraction from one side of the register to place a card over the writing table and under the stationery near the forward end of the writing table, and an impression roller assembly pivotally mounted on the register over the writing table area for movement to a position in engagement with the stationery and away therefrom, the assembly including a laterally movable impression roller for transfer of the image of raised characters on a card-like element held in the slide to the several plies of stationery in the writing table area when the card carrier slide is inserted into the register.

3,678,852

PRINTING AND COPYING EMPLOYING MATERIALS WITH SURFACE VARIATIONS

Julius Feinleib, Birmingham; Peter H. Klose, Troy, and Stanford R. Ovshinsky, Bloomfield Hills, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed April 10, 1970, Ser. No. 27,390
Int. Cl. B41n 1/14; B41m 5/02
U.S. Cl. 101—465 15 Claims



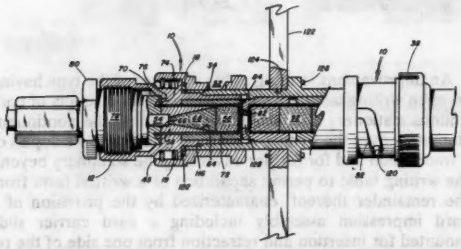
A printing plate is coated with an amorphous semiconductor material capable of being switched between a generally amorphous or disordered state and a crystalline or more ordered state in response to light. In the crystalline or more ordered state the surface of the material is rough or grainy, while in the generally amorphous or disordered state the surface of the material is smoother. Solutions adhere to the rough sur-

face of the material and do not adhere to the smooth surface. Ink may be fixed directly to the material or transferred to a document or offset roller. The material may be cleaned and reset into one of its states in preparation for recording another image.

3,678,853
QUICK DISCONNECT EXPLOSIVE CONNECTOR ASSEMBLY

Earl E. Kilmer, College Park, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 12, 1970, Ser. No. 57,848
Int. Cl. F42b 3/10
U.S. Cl. 102—27 R **4 Claims**

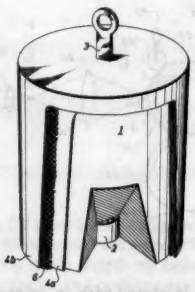


Apparatus for transferring a shock wave front from one detonating cord to another including quick-disconnect end connectors adapted to provide the respective ends of the cords with a quick-disconnect capability and a central interconnector having quick-disconnect mating end portions. Each detonating cord is attached to its respective end of the interconnector which itself might extend through an intervening obstruction. The central interconnector includes a cylindrical housing enclosing an explosive transfer lead composed of hexanitrostilbene explosive.

3,678,854
FLARE BODY

Ragnar Per-Olof Davidson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed June 6, 1969, Ser. No. 831,167
Claims priority, application Sweden, June 10, 1968, 7796/68
Int. Cl. C06d 1/10
U.S. Cl. 102—37.8 **9 Claims**



A flare has a cylindrical body composed of a solid combustible flare composition. One of the end walls of the body is covered with a non-combustible and heat-resistant covering and the side wall of the body is encompassed with a non-combustible and highly heat-resistant wire netting along its entire length. The netting ends substantially flush with the other end wall of the body. Ignition of the flare composition is started at this other end wall. The wire netting prevents direct access of combustion flames to the side wall of the body thereby impeding premature burning at localized areas of the side wall. It also provides a multitude of passages for the flow of fresh combustion air to the burning composition so that the same is gradually and uniformly consumed whereby the luminous efficiency of the flare is markedly increased.

3,678,855
PRACTICAL JOKE SMOKE BALLS OR LIKE DEVICES AND METHOD OF MAKING SAME

Bernard J. Semel, 1441 Okie St. N.E., Washington, D.C.

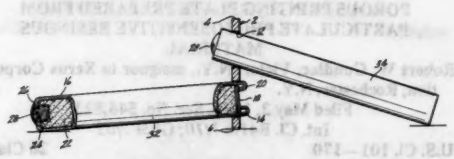
Continuation-in-part of Ser. No. 685,194, Nov. 22, 1967. This application July 17, 1969, Ser. No. 842,568
Int. Cl. C06d 1/10
U.S. Cl. 102—37.2 **1 Claim**

A practical joke smoke ball item of the pyrotechnic type having an impact and pressure-resistant casing containing a smoke-producing charge and open aperture means which initially accommodate at least one ignition fuse, said aperture means subsequently serving as a smoke emission port or chimney of the smoke ball during combustion of said charge.

3,678,856
SUPPORT MEANS FOR FUSEES

Aldo J. Barocca, and Ralph H. Benedict, both of Godfrey, Ill., assignors to Olin Mathieson Chemical Corporation

Filed June 30, 1969, Ser. No. 837,513
Int. Cl. C06d 1/04
U.S. Cl. 102—37.4 **1 Claim**



A support for a fusee comprising a rigid paperboard member having two apertures therein. The support will serve to hold the fusee in an upright position inclined with respect to an axis perpendicular to the supporting surface, in a position substantially horizontal with respect to the plane of the supporting surface, or can be used to interconnect a plurality of fusees to provide for sequential burning thereof.

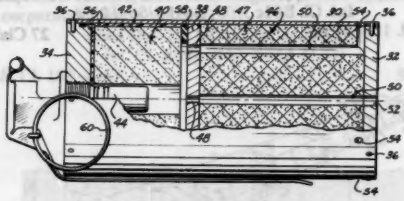
3,678,857
AEROSOL DISSEMINATOR

Robert W. Evans, Herndon; Richard C. Grimm, Triangle, and Myron A. Olstein, Fairfax, both of Va., assignors to The Susquehanna Corporation, Fairfax, Va.

Filed Feb. 26, 1971, Ser. No. 119,281
Int. Cl. F42b 5/20
U.S. Cl. 102—39 **16 Claims**

An embodiment of the invention disclosed herein shows a two-compartment disseminator for generating aerosols of smoke, poisons, gases, and other lethal and non-lethal agents. One disseminator compartment houses the propellant and the other compartment houses the agent. A bulkhead separates

the two compartments. Sonic nozzles are formed in this bulkhead. The gases generated by propellant combustion are vented through these nozzles at sonic velocity into passageways formed in the solid agent. The agent is eroded,



finely atomized and vaporized by the gases and expelled through exit orifices. The vaporized agent now condenses into minute particles to form with the gas an aerosol having long-term effectiveness. Close control of agent concentrations and dissemination time is also achieved.

3,678,858

ALL PLASTIC POLYCARBONATE SHOT SHELL WITH STAR CRIMP

George L. Herter, and Glen L. Mittelsteadt, both of Waseca, Minn., assignors to Herter's Inc., Waseca, Minn.

Filed July 31, 1969, Ser. No. 846,512
Int. Cl. F42b *5/30*
U.S. Cl. 102—43 P **1 Claim**

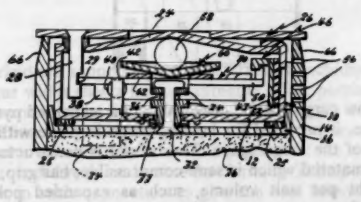
A plastic molded one piece shot shell case entirely of plastic and with the open mouth end reduced in thickness by molding and formed in a star crimp to close the case and confine the shot and powder.

3,678,859

TWO STAGE IMPACT FUZE

Jerry J. Wesson, Winter Park, and Thomas W. Boulter, Maitland, both of Fla., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Oct. 6, 1970, Ser. No. 90,184
Int. Cl. F42c *5/00*
U.S. Cl. 102—76 R **10 Claims**



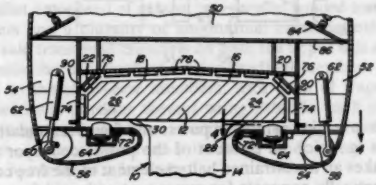
A two-stage omni-directional impact fuze having a firing pin assembly and a rotor containing a detonator. A pressure actuated locking arm assembly allows for the rotation of the rotor to the first stage arming position, while the removal of a wind tab allows for the rotation of the rotor to the second stage or fully armed position. In this position under impact in any direction a spherical weight located adjacent to the firing pin assembly causes movement thereof against the detonator and subsequent detonation of the fuze. It is this pressure actuation in conjunction with two-stage arming and omni-directional impact detonation which makes this fuze extremely safe and reliable in operation.

3,678,860

TRACK LOCKING DEVICE FOR AIR CUSHION VEHICLES

John Van Veldhuizen, Rte. 2 Box 54, Unionville, Tenn.

Filed July 6, 1970, Ser. No. 52,257
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **4 Claims**



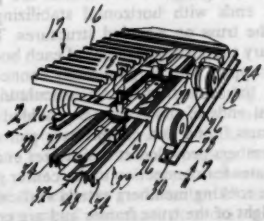
An air propelled vehicle including one or more lengthwise arranged and/or articulated cars each defining a longitudinally extending and downwardly opening channel for embracingly receiving a monorail therein of the type including a transversely enlarged upper horizontal portion including opposite side longitudinally extending undersurface portions. Each of the cars includes means for pumping air downwardly into the channel defined thereby in order to form a cushion of air between the upper surface of the monorail and the undersurface of the car. Also, each of the cars includes lower opposite side skirt portions defining the lower opposite side extremities of the corresponding channel and which are supported from the car for swinging movement inward beneath the opposite side longitudinally extending undersurface portions of the monorail, thereby locking each car against upward movement relative to the monorail. Finally, each of the inwardly swingable skirt portions includes roller means which project upwardly therefrom when the skirt portions are swung inwardly and are rollingly engageable with the opposite side longitudinally extending undersurface portions of the monorail.

3,678,861

CONVEYOR

Dimitry Holbert, Oak Park, Mich., assignor to Standard Alliance Industries, Inc., Chicago, Ill.

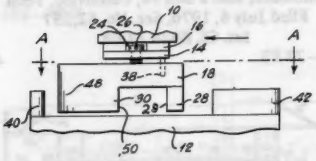
Filed Aug. 13, 1970, Ser. No. 63,392
Int. Cl. B61b *13/00*
U.S. Cl. 104—172 **5 Claims**



A conveyor chain for conveyor cars and the like having a plurality of rollers for engagement with guide rails for the

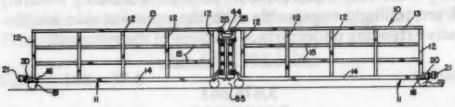
chain and a plurality of members carried by the chain having at least one substantially flat surface extending laterally of the chain adapted to be engaged by a chain driving member.

3,678,862
OVERHEAD ACCUMULATION CONVEYORS
John M. Leach, P.O. Box 341, Port Jefferson, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,030
Int. Cl. B65g *17/42*
U.S. Cl. 104—172 S **4 Claims**



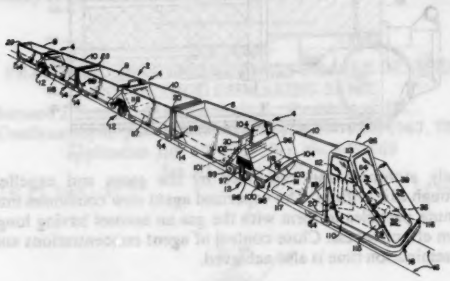
This invention relates to power and free accumulation conveyors in which an element of the power conveyor when it overtakes an unrestrained halted element of the free conveyor automatically connects for movement with said free element and also releases said free element when said free element contacts a stop placed in its path or another free element which has been stopped in its path, for example, in an accumulation area. The driving dog, which is mounted on the power element, is pivotable about a vertical axis to override selective dogs on the free element through a camming mechanism.

3,678,863
ARTICULATED RAILWAY CAR
William L. Pringle, Grosse Pointe Shores, Mich., assignor to Pullman Incorporated, Chicago, Ill.
Filed Aug. 21, 1970, Ser. No. 65,830
Int. Cl. B61d *3/10*; B61f *3/12*; B61g *5/02*
U.S. Cl. 105—4 R **12 Claims**



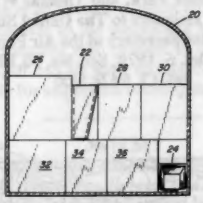
An articulated railway car comprises a pair of bodies connected to each other by means of an articulated structure. The bodies each include an upright truss-like frame of relatively high and narrow configuration. The frames are provided at their outermost ends with horizontal stabilizing members which support the truss on wheeled structures. The narrow truss is the primary supporting member of each body and provides the cargo support with cargo directly connected to and suspended from the truss frames. An articulating structure between adjacent ends of the bodies is provided for further stabilizing the truss frame and comprises a pair of back-to-back rocking members provided at their lower ends with segmental center plates for connection to the center plate of a 4-wheel truck. The rocking members extend vertically substantially the full height of the truss frames and are connected at their upper ends by a cushioning cylinder. Resilient devices bias the rocking members in a back-to-back contiguous relation during normal operation.

3,678,864
ARTICULATED MOTORIZED TRUCK TRAIN
Jack E. Gutridge, Dyer, Ind., assignor to Pullman Incorporated, Chicago, Ill.
Continuation-in-part of Ser. No. 712,167, March 11, 1968, abandoned. This application Dec. 16, 1970, Ser. No. 98,811
Int. Cl. B61c *3/00*; B61f *3/06*, *19/04*
U.S. Cl. 105—4 R **27 Claims**



A dispersed power train arrangement comprising a series of interconnected pairs of railroad cars, each pair being articulatedly connected with another pair by a power unit mounted on trucks between each pair of cars to define a freight unit, the free end of one car removably receiving a control cab unit or pod which is cushion mounted on one end of the car to absorb vibrational shocks, the pod having its structural collision member resiliently or spring suspending a cab containing the operator controls and seat, the controls being couplable with each of the power units of each of a series of pairs of cars defining the power train whereby an operator located in the cab may operate each power unit to drive the cars or may brake the cars. Alternately the dispersed power train arrangement comprises a pair of flat deck railway cars articulatedly connected with one another through the power unit or module mounted on trucks, the front end of the front car having a control pod mounted thereon with successive containers mounted on the flat deck by the control pod or the control pod may be replaced by a container and actually be located on top of the power unit or module. In all of the dispersed power train arrangements, one end of a car is supported by its own trucks and the other end is supported by the trucks of the power unit or module trucks.

3,678,865
CARGO BOLSTER
Wallace D. Van Etten, Star Rte. Box 517, Eustis, Fla.
Filed March 16, 1970, Ser. No. 19,658
Int. Cl. B61d *45/00*; B60p *7/10*
U.S. Cl. 105—369 B **2 Claims**

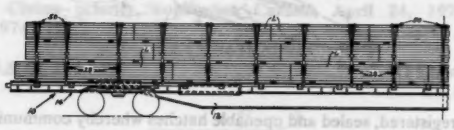


A hollow cargo bolster, preferably of a truncated pyramid-like shape, is provided for holding cargo in place within the confines of the cargo space. The bolster is constructed of a resilient material which is semi-compressible, has grip, and a low-weight per unit volume, such as expanded polyvinyl chloride. Stop means are provided on the inner surface of the hollow bolster near the top to accommodate stacking and storage.

3,678,866
METHOD AND MEANS FOR SECURING LADING ON RAILWAY FLAT CARS

Walter E. O'Leary, Creve Coeur; Duane V. Thornton, St. Charles; James C. Hammonds, St. Charles, and Roy R. Dare, St. Charles, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 13, 1970, Ser. No. 80,284
Int. Cl. B60p 7/10; B61d 45/00
U.S. Cl. 105—369 A 9 Claims



A railway flat car for carrying loads, such as lumber, on the deck of the car with resiliently anchored banding providing tie-downs to secure the loads onto the deck so that a minimum travel or shifting of the loads longitudinally along the deck is obtained when the loads settle and impact forces are exerted against the car. The banding is arranged in an endless double loop over the load with the free ends of the bands positioned over the upper surface of the load for tensioning and securement. The double loop permits the banding to slip longitudinally about its anchor points thereby to provide a mechanical advantage and permitting a relatively high initial tensioning to be obtained with conventional tensioning equipment without the use of power tools. Various means are employed to reduce any pretensioning in the banding upon removal of the banding and unloading the flat car.

3,678,867
ROOF STRUCTURE FOR RAILWAY CARS

Floyd J. Brinks, Hobart; Lucian P. Day, Jr., Highland, and Jerry L. Jones, Michigan City, all of Ind., assignors to Pullman Incorporated, Chicago, Ill.

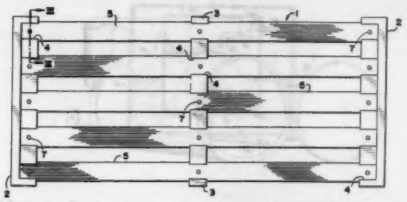
Filed May 7, 1970, Ser. No. 35,368
Int. Cl. B60d 39/00
U.S. Cl. 105—377 5 Claims

A rigid self supporting car roof structure including abutting full car width sheets having stiffening offset portions spaced transversely of the sheet and extending the entire length of the car. These substantially vertical stiffening portions are connected to substantially horizontal portions of the roof at their upper and lower ends thereby forming Z-shaped bending beams in such connection to give the roof internal strength both along its length to resist coupler forces, and in a transverse direction to prevent bulging of the side walls from cargo within the car.

3,678,868
PALLET

Kashichi Hirota, Tokyo, Japan, assignor to Kyowa Denki Kagaku Kaisha, Tokyo, Japan

Filed March 18, 1970, Ser. No. 20,497
Claims priority, application Japan, April 3, 1969, 44/30456
Int. Cl. B65d 19/18
U.S. Cl. 108—51 4 Claims

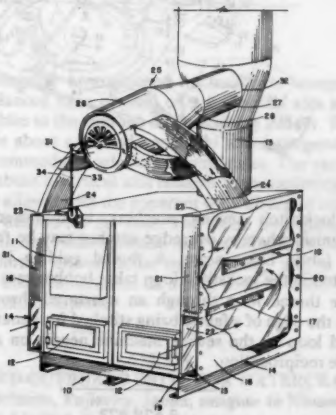


A pallet composed of at least two parallel spaced transverse members and a plurality of longitudinal members extending across said transverse members on both the upper side and the lower side thereof. Each of the longitudinal members is connected to the transverse members, with each of trapezoidal cross-sectional portions thereof being fitted in each of complementary dovetail grooves formed in the upper and lower surfaces of each transverse member, and being secured therein by means of a fastener.

3,678,869
AIR HEATER AND EXHAUST GAS DILUTING APPARATUS FOR INCINERATOR

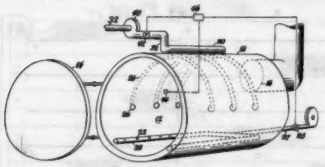
Vernon D. Bowman, Kettering, Ohio, assignor to Bowman Enterprises, Inc., Baltimore, Md.

Filed Sept. 25, 1970, Ser. No. 75,419
Int. Cl. F23g 5/00
U.S. Cl. 110—8 R 3 Claims



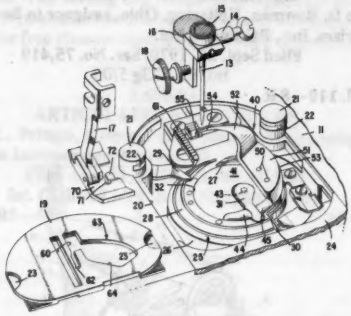
An air heater and exhaust gas diluting apparatus for incinerator in which one or more of the outer walls of the incinerator are formed with spaced wall plates with baffle plates positioned to form a tortuous air passage between the spaced wall plates, duct means connected between the tortuous air passage and the exhaust gas chamber of said incinerator and fan means associated with the duct to draw air through the tortuous passage to heat the same and discharge the same into the exhaust gas chamber to add heat thereto and dilute the exhaust gases therein.

3,678,870
SLUDGE BURNER
Lubertus Bakker, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.
Filed May 20, 1971, Ser. No. 145,144
Int. Cl. F23g 5/00
U.S. Cl. 110—8 R 8 Claims



An incinerator that is particularly adapted to burn sludge type materials alone or in combination with the usual solid wastes.

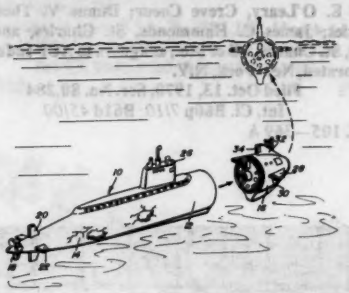
3,678,871
OVEREDGING DEVICE FOR SEWING MACHINES
Karl H. Killinger, and Stanley J. Ketterer, both of Jamesburg, N.J., assignors to The Singer Company, New York, N.Y.
Filed April 23, 1971, Ser. No. 136,672
Int. Cl. D05b 1/20
U.S. Cl. 112—162 7 Claims



A lockstitch sewing machine is disclosed having a mechanism whereby overedge stitches may be formed in the work fabric being sewn. A thread guiding insert accommodated in the lockstitch loop taker bobbin case directs each needle thread loop through an apertured throat plate and about the edge of a fabric being stitched for penetration of the thread loop by the sewing machine needle on a subsequent needle reciprocation.

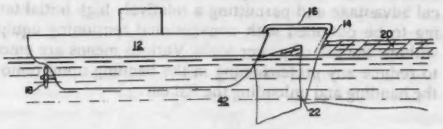
3,678,872
EMERGENCY UNDERWATER ESCAPE VEHICLE
Luigi Migliaccio, and Edward P. Migliaccio, both of 78 Wayne Ave., Paterson, N.J.
Filed Sept. 14, 1970, Ser. No. 71,652
Int. Cl. B63g 8/40
U.S. Cl. 114—16.7 14 Claims

A submarine construction of generally conventional overall configuration but differing from the usual submarine construction in that it includes a forward end portion which is removably attached to the remainder of the submarine and includes its own propulsion motor, control station and torpedo tubes. The removable front or forward section is designed to be utilized as an escape vessel should the rear end portion of the submarine be severely damaged and the rear bulkhead of the forward end portion and the opposing bulkhead include



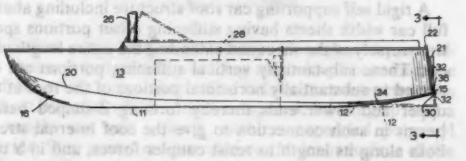
registered, sealed and openable hatches whereby communication between the main submarine hull and the forward end portion of the submarine may be established.

3,678,873
METHOD AND APPARATUS FOR CUTTING ICE
John D. Bennett, Denton, Tex., assignor to Sun Oil Company, Dallas, Tex.
Filed Oct. 2, 1970, Ser. No. 77,483
Int. Cl. B63b 35/12
U.S. Cl. 114—42 10 Claims



Removing ice encroaching an offshore platform from an ice floe or ice located in the path of a vessel, by making a pair of cuts in the ice parallel to the direction of travel of the vessel or ice floe, with each cut angled from vertical so that the cross-sectional area of the bottom surface of the ice being removed is larger or smaller than the cross-sectional area of the top surface of the ice being removed. The ice section being removed is then broken from the remaining ice mass by forward movement of the vessel or pressure of the ice floe against the offshore platform. An additional cut can be made between and parallel to the pair of parallel cuts, to make two ice sections in order to facilitate forcing of the severed ice aside to a point beneath or on top of the ice mass when the ice sections are broken from the remaining ice mass. These cuts can be made with mechanical saws or high pressure nozzles utilizing high pressure fluids.

3,678,874
CONVERTIBLE BOAT
John W. Flink, 1690 Mulberry Lane, San Jose, Calif.
Filed June 15, 1970, Ser. No. 46,231
Int. Cl. B63b 1/28
U.S. Cl. 114—66.5 P 7 Claims



This invention relates to a boat hull provided with improved

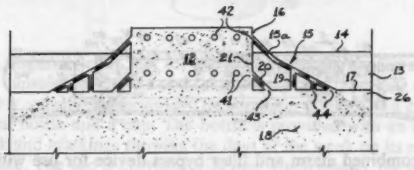
flap or vane means at the stern portion of the hull for use in converting the hull in an expeditious and simplified fashion from one type of boat hull to another type of boat hull, such as a sailboat hull to a hydroplane hull and vice versa.

3,678,875

TRIMMING PIPE SYSTEM FOR FREE-FLOWING CARGOES

George Thomas Richardson Campbell, and Kimio Ohta, both of Tokyo, Japan, assignors to Algoship International Limited, Nassau, Bahamas

Filed June 25, 1970, Ser. No. 49,734
Claims priority, application Canada, April 24, 1970, 19749/70
Int. Cl. B63b *25/08*
U.S. Cl. 114—73 11 Claims



A cargo vessel adapted for the carriage of free-flowing cargo loaded through hatch opening and a series of open ended cargo trimming pipes extending from the walls of the hatches and into the holds of the vessel at points remote from the cargo hatches, the cargo trimming pipes form structural members for the support of the hatch coamings and upper wing tanks through which the trimming pipes pass.

3,678,876

JIB SHEET APPARATUS FOR SAILBOATS

Hobart L. Alter, Capistrano Beach, Calif., assignor to Coast Catamaran Corporation, San Juan Capistrano, Calif.

Filed Feb. 16, 1971, Ser. No. 115,530
Int. Cl. B63b *21/04*; B63h *9/04*
U.S. Cl. 114—102 10 Claims

A jib sheet apparatus for a sailboat that includes a pair of cleat-block units mounted on opposite sides of the sailboat. Each cleat-block unit is tiltably resiliently supported above its mounting point on the boat. A jib sheet has its opposite ends dead-ended on the cleat-block units, with the bight portions of the jib sheet travelling through such units and being releasably secured to such units by the cleat member thereof.

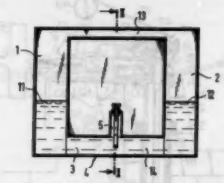
3,678,877

PASSIVE STABILIZATION TANKS

Denis D. A. Csupor, Geneva, Switzerland, assignor to Maierform Holding S.A., Geneva, Switzerland

Filed June 30, 1970, Ser. No. 51,316
Int. Cl. B63b *43/06*
U.S. Cl. 114—125 11 Claims

The present invention consists in a passive stabilizing tank installation for damping components in the movement of a floating body, comprising two partially filled tanks which are connected by ducts for the passage of liquid and of air above the liquid in the tanks, between the tanks, the ducts being provided with frequency regulating duct means with a regulating device in the form of a slide or rotary valve with a full plate



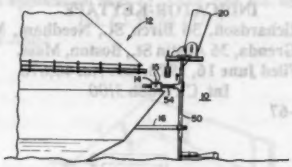
and bypass duct means, a second regulating valve in the form of a plate or slide with an opening being provided for adjusting the natural tank damping, both in the regulating duct means and also in the bypass duct means or in at least one duct serving for air movement between the tanks.

3,678,878

SELF-STEERING ARRANGEMENT

Robert Alan Ross-Clunis, 1410 W. 4th St., Los Angeles, Calif.

Filed Feb. 24, 1970, Ser. No. 13,477
Int. Cl. B63h *25/08*
U.S. Cl. 114—144 R 19 Claims



A self-steering arrangement for sailboats comprising a counterbalanced vane pivoted on a horizontal axis and coupled by cables to the trim tab of an auxiliary rudder. The vane is pivotable about a second horizontal axis orthogonal to the first to accommodate variations in wind force. The vane is also pivotable about a vertical axis relative to its mounting to permit it to be aligned with the apparent wind direction relative to the course desired for the boat. The entire arrangement is so mounted that the rudder portion may be withdrawn out of the water to permit conventional maneuvering, and is readily mountable and demountable on a boat without disturbing the normal operation thereof.

3,678,879

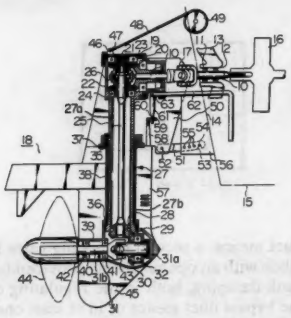
INBOARD-OUTBOARD DRIVE FOR WATERCRAFT

Yoshiro Morimoto, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 19, 1971, Ser. No. 116,963
Claims priority, application Japan, Feb. 24, 1970, 45/15756
Int. Cl. B63h *1/04*, *25/42*
U.S. Cl. 115—35 4 Claims

A propulsion unit for an inboard-outboard drive of a watercraft having a power source mounted therein which propulsion unit includes a horizontal drive shaft operatively connected to the power source, a vertical drive shaft, a first gear means connecting the vertical drive shaft to the horizontal drive shaft, a horizontal propeller shaft provided with a propeller, a second gear means connecting the propeller shaft to the vertical drive shaft and a universal joint carried by one of the two horizontal shafts and having a center lying on the

axis of the vertical drive shaft. The propulsion unit further includes housing means which is disposed outboard of the watercraft and enclosing movable parts, the housing means including a first housing member and a second housing member one of which is associated with the universal joint to be freely



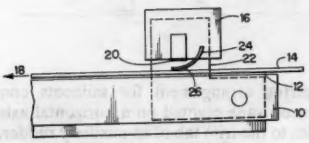
rotatable about the axis of the vertical drive shaft for thereby steering the watercraft, and the first housing member supporting at one end said first gear means and at the other end said second gear means whereby a reaction torque produced by the gear means is absorbed by said first casing member.

3,678,880

COMBINATION CARD HOLD DOWN AND AUDIBLE INDICATOR-KEYTAPE

Stephen M. Richardson, 36 Birch St., Needham, Mass., and Edward P. Grenda, 36 Austin St., Boston, Mass.

Filed June 16, 1970, Ser. No. 46,678
Int. Cl. G08b *3/00*
U.S. Cl. 116—67 **4 Claims**



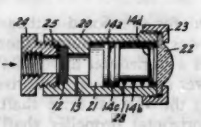
In a mark sense card reader having a read head with light sensitive elements therein, a card hold down device for maintaining a card passing under the read head in a flat position to prevent distortion, said hold down giving an audible indication when the card has passed the head by contacting the card supporting surface.

3,678,881

DEVICE FOR INDICATING CONTAMINATION OF A FLUID SUPPLY TO A FLUIDIC CIRCUIT

Jeffrey N. Shinn, Scotia, N.Y., assignor to General Electric Company

Filed March 27, 1970, Ser. No. 23,254
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **16 Claims**



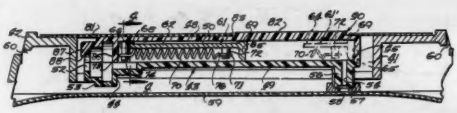
A fluid flow filter having filter hole openings of a selected size or of size smaller than the smallest fluid opening in a fluid circuit being monitored by the contamination-indicating device is serially connected with a fluid flow restrictor for bypassing a small portion of the supply fluid. A pressure-sensitive indicator is connected to the juncture of the filter output and restrictor for indicating the pressure state at the juncture. A high pressure state indicates negligible contamination of the fluid whereas a low pressure state indicates substantial contamination thereof.

3,678,882

COMBINATION ALARM AND FILTER BYPASS DEVICE FOR A SUCTION CLEANER

Daniel J. Kinsella, Bloomington, Ill., assignor to National Union Electric Corporation, Greenwich, Conn.

Filed May 28, 1971, Ser. No. 147,837
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 AD **14 Claims**



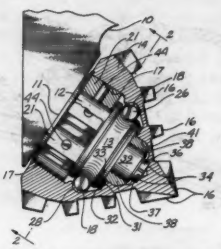
A combined alarm and filter bypass device for use with a suction cleaner wherein the device is compact in size and of a simplified construction. The housing of the device is of a shallow, generally box-like configuration which permits the device to be installed in various locations in or on the casing of an associated cleaner and which facilitates the visibility thereof from the exterior of the casing. The reduced size of the device also minimizes interference with other components of the cleaner.

3,678,883

WORN BEARING INDICATOR

John F. Fischer, Los Alamitos, Calif., assignor to Smith International Incorporated, Newport Beach, Calif.

Filed March 25, 1970, Ser. No. 22,609
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 Q **20 Claims**



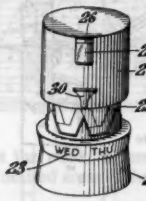
An earthboring drill or the like having cutters mounted on bearings including a plurality of bearing segments is described. An insert is provided within at least a portion of the segments with a clearance from the original bearing surface of an amount just equal to acceptable wear of the segment, so that when the segment wears down the insert has substantial contact with adjacent bearing surfaces to provide a remotely sensible signal indicative of bearing wear. In one embodiment, the insert is formed of tungsten carbide or other similar hard material that causes the bearing to jam or lock, thereby increasing torque on the drill bit, which is sensed by the driller. In another embodiment, a mobile marker, such as a liquid radioactive material or dye, enclosed in a frangible container employed as the insert, and the release of dye or radioactive material when the insert contacts a bearing wall provides an indication of bearing wear.

3,678,884

DISPENSING AND RECORDING CONTAINER

Carl L. Robbins, Evansville, Ind., assignor to Mead Johnson and Company, Evansville, Ind.

Filed Dec. 28, 1970, Ser. No. 101,761
Int. Cl. G09f 9/00
U.S. Cl. 116—121 9 Claims



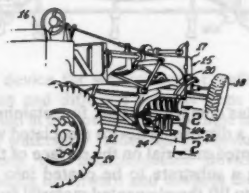
A dispenser-container for use in dispensing oral contraceptive capsules or the like and for automatically recording each time a capsule is dispensed. The container consists of a cylindrical bottle and a cap. The bottle is provided with an inset track and markings showing the days of the week on its outer surface. The cap is provided with lugs which engage the tract, and with an indicator. The cap is twisted in the counterclockwise direction and then raised to the open position, and lowered for the closed position. An opening in the side wall of the cap facilitates the dispensing of the capsule after the cap is raised. Each time the cap is closed the indicator advances to the marking for the next day.

3,678,885

SLOPE AND GRADE METER

William K. Ferguson, 2526 E. North Lane, Phoenix, Ariz.

Filed May 17, 1971, Ser. No. 143,848
Int. Cl. G09f 9/00
U.S. Cl. 116—124 9 Claims



A device for use on construction equipment of the type having an earth moving tool positionably mounted thereon. The meter includes a first indicator for indicating the desired position at which the tool must be held to form a desired slope or grade. A second indicator is provided which indicates the actual tool position so that by comparing the desired and the actual position indications an operator is able to move the tool accordingly.

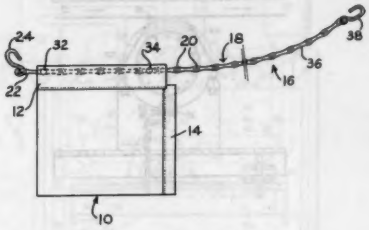
3,678,886

WARNING FLAG AND MOUNTING CARRIER THEREFOR

James W. Tibbet, 1595 Lampman Road, Gold Hill, Oreg.

Filed Feb. 16, 1971, Ser. No. 115,468
Int. Cl. G09f 17/00
U.S. Cl. 116—173 7 Claims

The invention relates to signal flags and mounting carriers therefor. A flag including two angularly related hems is adapted to receive in one of the hems, and to be attached to a flexible and elastic carrier, the carrier being adapted to be wrapped around an over-length vehicle carried load, to have the active length secured under tension and any surplus length correspondingly looped out of harm's way. The same flag may be mounted, if desired, on a rigid mounting carrier which comprises a hollow post. A flag spreading spring carried by the upper end of the post is received in the second hem of the flag.



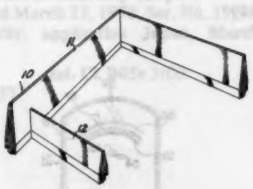
The spring can be folded down and may have a hook at the free end thereof caught in a perforation formed in the post when the flag and carrier are to be stored. Snap fasteners provided on the first hem of the flag may be detachably secured through complementary fasteners to either form of mounting carrier.

3,678,887

TEMPLATE-MASH

Sam E. Smith, 121 Tillman Lane, Athens, Ga.

Division of Ser. No. 733,869, June 3, 1968, Pat. No. 3,552,987.
This application May 11, 1970, Ser. No. 48,714
Int. Cl. B05c 11/12
U.S. Cl. 118—504 4 Claims



The template has its outer boundry walls of greater height than the inner dividing walls. The width of the dividing wall is determined by the desired width of the pattern separation lines. Both the outer walls and the dividing walls are taped upwardly to prevent color particles from lodging on the template. The under surfaces of the template are formed either concave or with depending flanges so as to prevent the template from picking up any appreciable amount of liquid plastic when it is removed. The template is flexible so as to conform to irregularities in the surface to be coated.

3,678,888

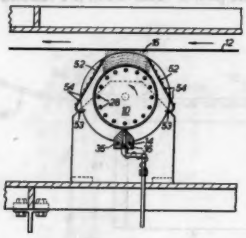
MATERIAL DEPOSITING APPARATUS

Gordon Idris Davies, Killay, Swansea, and Terence Williams, Penllergaer, Glamorgan, both of Wales, assignors to The British Iron and Steel Research Association, London, England

Filed Feb. 25, 1970, Ser. No. 13,941
Claims priority, application Great Britain, Feb. 28, 1969, 10,984/69
Int. Cl. C23c 13/12
U.S. Cl. 118—48 2 Claims

The invention concerns an apparatus for depositing volatilizable non-thermosetting material on to a substrate. A cylindrical surface is rotated towards and away from the substrate and a feeder head spaced apart from the surface

deposits the material thereover. Substantially the whole of the cylindrical surface is heated so that material deposited



thereon and moved towards the substrate on rotation of the surface will be vaporized and deposited on the substrate.

3,678,889

REFLECTOR ASSEMBLY FOR REFLECTING THE VAPORS OF HIGH TEMPERATURE VOLATILE MATERIALS

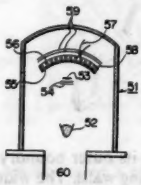
Yoshio Murakami, and Takasi Yamazaki, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Feb. 8, 1971, Ser. No. 113,306

Claims priority, application Japan, Feb. 6, 1970, 45/9982; Feb. 17, 1970, 45/14975

Int. Cl. C23c *13/08*

U.S. Cl. 118—49 **12 Claims**



A vapor reflector assembly disposed in a vapor deposition chamber comprises a thin, fluorinated resin film coated onto a support body and means to heat said film to an elevated temperature.

3,678,890

PANEL COATING APPARATUS

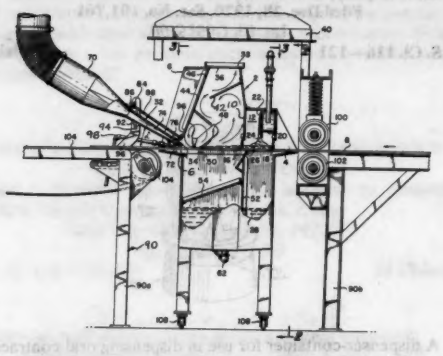
Alvin T. Ehrensing, Corona, Calif., and Clement R. Taylor, Boise, Idaho, assignors to Boise Cascade Corporation, Boise, Idaho

Filed Dec. 9, 1970, Ser. No. 82,904

Int. Cl. B05c *11/00*

U.S. Cl. 118—63 **18 Claims**

Apparatus for coating with a liquid a continuously travelling horizontal panel having a uniform or irregular surface, characterized by the provision of housing means including a flood coating compartment in which a massive quantity of liquid coating is deposited to a given depth upon the upper surface of the travelling panel, and an air doctoring compartment in which a large volume of high pressure air is angularly directed on the panel in a direction opposite to the direction of panel travel. The excess liquid coating in both compartments is directed laterally off the longitudinal edges of the panel and is



collected by gravity in collector means arranged in the bottom of the housing beneath said compartments.

3,678,891

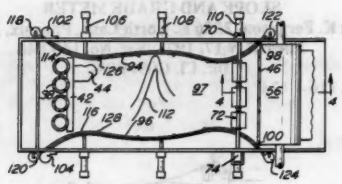
COATING APPARATUS

Karl M. Rosenberg, Philadelphia, Pa., assignor to Flo-Tech Corp., Wilmington, Del.

Filed Jan. 12, 1970, Ser. No. 2,212

Int. Cl. B05c *3/04*

U.S. Cl. 118—402 **11 Claims**



The apparatus comprises a tank for retaining a pool of supporting liquid, a dispensing device associated with the tank for placing pigmented material on the surface of the pool, a roller for conveying a substrate to be coated into surface contact with the pool to lift the pigmented material from the pool, and selectively operable manipulating devices arranged to provide a desired pattern on the pigmented material of the pool. Manipulating devices comprise wave-generators, undulating tank side walls, and devices for accelerating and decelerating the substrate, each providing a characteristic visual effect in the finished product.

3,678,892

PALLET AND MASK FOR SUBSTRATES

Albert R. Fairchild, Winston-Salem, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

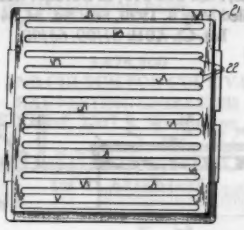
Division of Ser. No. 732,965, May 29, 1968, Pat. No. 3,577,325. This application May 19, 1970, Ser. No. 48,670

Int. Cl. C23c *13/08*

U.S. Cl. 118—504 **2 Claims**

A pallet and a mask for use in the manufacture of thin film components are machined from a block of high density fine grain pressed graphite to the desired size and shape. The graphite pallet and mask are plated with a flash of copper so that the copper may be dissolved or reacted with an acid to release the layer of precious metals which accumulate during repeated use of the pallet and mask. Thin film substrates are

placed in the pallet and covered by the mask. In use, the assembled pallet and mask are inverted such that gravity forces



the substrates against the mask to insure that the metal is deposited only on the desired areas of the substrate.

3,678,893

IMPROVED DEVICE FOR SUPPORTING SEMICONDUCTOR WAFERS

Harvey W. Bell, III, San Jose, Calif., assignor to Stewart-Warner Corporation, Chicago, Ill.

Division of Ser. No. 719,174, April 5, 1968, Pat. No. 3,553,037. This application May 1, 1970, Ser. No. 43,659

Int. Cl. B05c *11/12*

U.S. Cl. 118—500 **1 Claim**

A supporting device for semiconductor wafers to be used during deposition and diffusion process steps by which the wafers are oriented at an upward sloping angle in the direction of gas flow. The wafers are loaded on the devices so that the surfaces at which the semiconductor devices are being fabricated are facing downward and towards the downstream end to thereby provide an even gas flow across the face of each wafer and prevent the deposit on the desired surfaces of any contaminants which might be knocked loose from the interior surface of the reaction tube.

3,678,894

FLOCKING

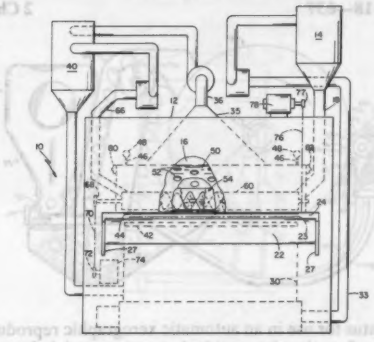
David I. Walsh, Barrington, R.I., assignor to Indev, Inc., Pawtucket, R.I.

Filed Dec. 24, 1969, Ser. No. 887,986

Int. Cl. B05c *5/00*

U.S. Cl. 118—624 **12 Claims**

A flocking apparatus for applying flock fibers to an article travelling therethrough comprising an article support, a flock distributor comprising a rotary drum having peripheral apertures arranged in a predetermined pattern, mounted above the article support for rotation about an axis parallel to the article support and transverse to the path of travel of said article, and spaced from the article support by a distance greater than the thickness of said article, a flock supply arranged to supply flock to the interior of the drum, means for rotating the drum at a selected peripheral speed related to the linear speed of the article and in a direction such that the part of the drum adjacent the article is moving in the same horizontal direction as



the article beneath, and means for establishing an electrostatic field between the flock distributor and the article.

3,678,895

MAGNETIC CASCADE DEVELOPMENT DEVICE FOR DRY PROCESS ELECTROPHOTOGRAPHY

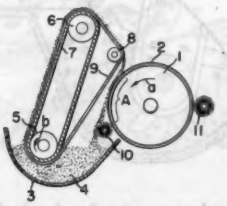
Wasaburo Ohta, Yokohama; Kazuhiko Kasuya, and Masayuki Yamauchi, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed March 13, 1970, Ser. No. 19,360

Claims priority, application Japan, March 15, 1969, 44/19813

Int. Cl. B05c *5/00*

U.S. Cl. 118—637 **6 Claims**



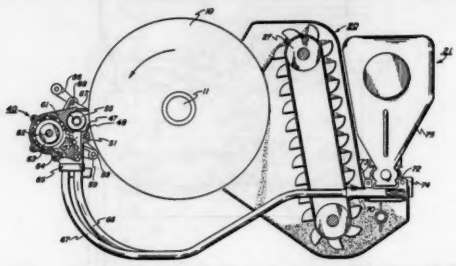
Cascade development device for a dry process electrophotography includes a magnetic endless belt trained around a pair of rollers and a non-magnetic endless roller partially wrapped over the magnetic belt along its going pass and trained around a guide roller spaced apart from the upper one of the pair of rollers and adjacent to the upper end of an development of an electrophotographic recording medium in such a manner that the non-magnetic belt may be separate from the magnetic belt adjacent to the upper one of the pair of rollers. The developer is entrained and transported upon the non-magnetic belt and is freed from the magnetic field when the belts are separated so that the developer may be freely cascaded. Mixing means is provided for mixing the returned developer and guide roller oscillating means is also provided so as to uniformly cascade the developer.

3,678,896

CONVEYOR SYSTEM

Robert E. Hewitt, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 28, 1971, Ser. No. 110,435
Int. Cl. G03g 13/00
U.S. Cl. 118—637 2 Claims



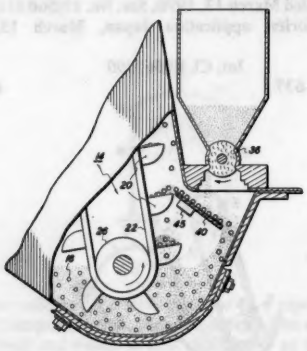
Apparatus for use in an automatic xerographic reproducing apparatus for cleaning residual toner material from the photoconductive surface after the image has been transferred to a final support material for returning the residual toner to a xerographic developing station via a chain conveyor of improved construction for reuse in the xerographic process.

3,678,897

DEVELOPER MIXING APPARATUS

Robert E. Hewitt, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 28, 1971, Ser. No. 110,489
Int. Cl. G03g 13/00
U.S. Cl. 118—637 4 Claims



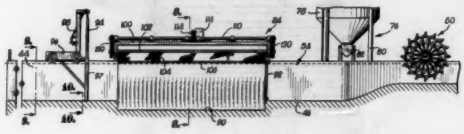
Improved cascade apparatus for developing electrostatic images wherein a latent electrostatic image supported on a moving member is developed by cascading a flow of developer material including a magnetic carrier component and an electroscopic toner component through a development zone. A toner dispenser dispenses toner material to supplement that portion consumed during development. The dispensed toner material is received onto a chute which directs the toner material into a predetermined location in the sump of the developer housing. A bucket conveyor moves developer material upwardly in the housing and spillage from the buckets is directed along the chute to combine with the dispensed toner material and also to prevent the dispensed toner material from clinging on the chute. A magnetic field producing member is positioned on the chute adjacent the path of the bucket conveyor to control the direction of flow of the spillage and to pull excess developer material from the buckets.

3,678,898

METHOD AND APPARATUS FOR RAISING AND HARVESTING FISH

William R. Gross, P.O. Box 510, El Dorado, Kans.

Filed May 4, 1970, Ser. No. 34,244
Int. Cl. A01k 61/00, 63/00
U.S. Cl. 119—3 14 Claims



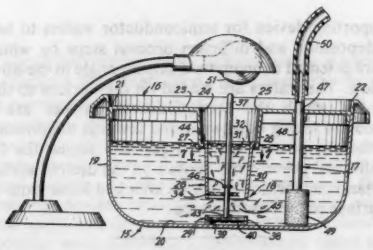
A method and apparatus for raising and harvesting fish utilizes a closed loop for confining a body of water and a paddle wheel to create an artificial current in the body of water of sufficient magnitude to induce fish in the water to swim against the current. Feeding mechanism disposed adjacent the paddle wheel is operable to introduce feed into the water. The artificial current created by the paddle wheel induces fish in the water to swim against the current and toward the food supply. A plurality of air-gathering buckets on the paddle wheel aerate the water to assure an adequate supply of oxygen for the fish. A portion of the closed loop defines an open ended container which is periodically operated to confine a number of fish when the latter have gathered to partake of the food. The container has a curved surface defining its bottom and rotatable structure is disposed longitudinally of the container for rotation over the curved surface to remove any fish confined within the container.

3,678,899

SHRIMP HATCHERY

David D. Lovitz, Short Hills, N.J., assignor to Sternco Industries, Inc., Harrison, N.J.

Filed April 1, 1971, Ser. No. 130,321
Int. Cl. A01k 61/00
U.S. Cl. 119—2 11 Claims



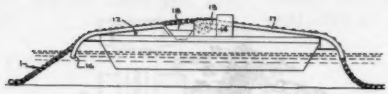
A hatchery for producing baby shrimp to be used as fish food in home aquariums. A water container has a removable cover with a central aperture from which an annular wall extends downwardly into the interior of the container, the bottom of the wall releasably supporting a two-part pick-up cup comprising a housing and therebelow a separable closure trap attached to a hand manipulable stem extending up through said housing, said annular wall and cover aperture. The assembly is placed under a light, and the closure trap permitted to drop to the base of the container, thereby leaving a space between the housing and the trap. Shrimp eggs that were placed in the partially filled container hatch, and the baby shrimp, attracted to the light seen through the bottom of the housing, swim toward the light, through said space and up into the housing, whereafter the stem is raised to lift the closure trap into engagement with the bottom of the housing, thereby

trapping the shrimp. The two-part pick-up cup is then lifted out of the container and transferred to an aquarium, the shrimp being released, for use as fish food, by lowering the stem to separate the trap from the housing and dipping the separated trap into the aquarium water.

3,678,900
PROCESS AND CULTCH FOR CULTIVATING AND HARVESTING SHELLFISH

Claudine Marie Kolesa, 2207 S. Washington Ave., Titusville, Fla.

Filed July 17, 1970, Ser. No. 55,727
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 **9 Claims**



A process for cultivating and harvesting shellfish, particularly oysters, wherein a continuous, permanent cultch is progressively formed by inserting one ring through another to provide a series of interlocked loops or links, and the cultch is laid on the bottom of a waterway to collect spat and hold the spat during growth to mature oysters. The oysters are harvested by raising the cultch progressively, removing marketable oysters, and returning the cultch progressively to the waterway bottom following oyster removal. A cultch laying barge and a harvesting barge are disclosed schematically.

3,678,901
ROTATING BIRD PERCH

William J. Dulle, 1036 E. 6th Ave., Long Beach, Calif.

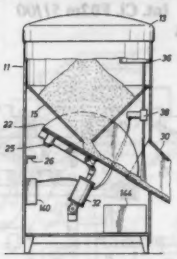
Filed Dec. 30, 1970, Ser. No. 102,660
Int. Cl. A01k *31/12*
U.S. Cl. 119—26 **5 Claims**

A rotating bird perch having a platform which is rotatably mounted to a base and which mounts a bird support to which is attached one or more mirrors. The mirror rotates with the bird support so that a bird on the support is exposed to changing images in the mirror. The rate of rotation of the platform can be varied.

3,678,902
TIMED ANIMAL FEEDER

Arthur P. Ruth, 2302 Brookmere, Houston, Tex.

Filed July 21, 1972, Ser. No. 56,923
Int. Cl. A01k *5/02*
U.S. Cl. 119—51.11 **5 Claims**

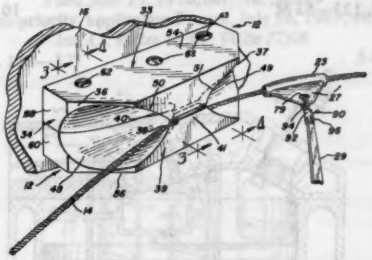


A timed animal feeder which is responsive to sunrise and sunset to trigger the distribution of animal feed. In one embodiment, the feed bin has an open hole at its bottom which accumulates a predetermined charge of feed on a trough. When the sensor notes sunrise or sunset, the trough is tipped and aligned with a chute extending out of the equipment for dumping the animal feed. The trough is then rocked back to its original position and another charge or accumulation of animal feed on the trough is collected for the next feeding. If water is required for the feed, a water dispenser is operated simultaneously. In another embodiment, occurrence of sunrise or sunset triggers into operation a motor rotated slinger which is positioned beneath the feed bin having a hole at its bottom. A charge of animal feed is accumulated on the slinger and when the motor is driven, the food is slung out of the equipment. The end of rotation permits an accumulation of an additional charge of animal feed on the slinger.

3,678,903
ANIMAL RUN LEASH GUIDE ASSEMBLY

Natty P. Ferraro, 236 Valley Road, Cary, Ill.

Filed Oct. 2, 1970, Ser. No. 77,686
Int. Cl. A01k *03/00*
U.S. Cl. 119—120 **7 Claims**

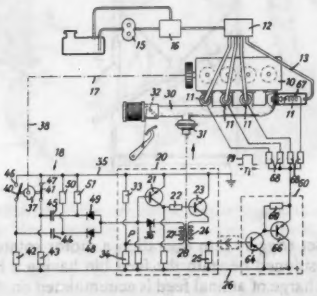


A leash guide assembly for confining the movement of a tethered animal to a limited area, but enabling controlled movement within the area along the guide assembly in opposite directions. A plurality of stationary retaining blocks provide a mount for an endless cable which defines the boundaries of the limited area. A traveler member having a hole therethrough is slidably secured along the cable and has a flange to which the tethered animal is secured. Each of the retaining blocks includes a pair of opposing resilient jaws defining a passageway within which the cable is retained, the resilient jaws being capable of spreading to permit the flange of the traveler to pass quickly and smoothly therebetween. A pair of inwardly turned lips on the jaws retains the cable in the passageway as the traveler passes therethrough.

3,678,904
ELECTRICALLY CONTROLLED FUEL INJECTION ARRANGEMENTS

Hermann Scholl; Norbert Rittmannsberger, both of Stuttgart; Willi Gansert, Kornwestheim, and Herbert Arnold, Oberriexingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 17, 1970, Ser. No. 55,882
Int. Cl. F02m 51/00
U.S. Cl. 123—32 EA 14 Claims

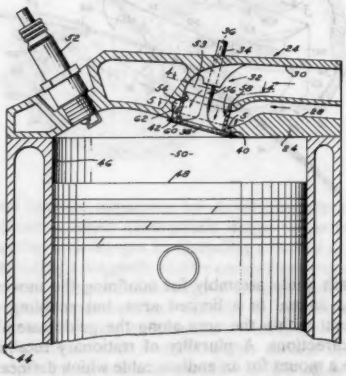


A monostable multivibrator generates pulses having lengths dependent on the pressure in the intake manifold of the engine, which pulses trigger an npn silicon power transistor into conduction to provide current to respective ones of the control windings of the fuel injection spray valves, which windings are connected through the emitter of the power transistor.

3,678,905
INTERNAL COMBUSTION ENGINE DUAL INDUCTION SYSTEM

Roy E. Diehl, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 29, 1970, Ser. No. 50,619
Int. Cl. F02b 75/18; F01l 3/00; F02b 75/02
U.S. Cl. 123—52 M 10 Claims

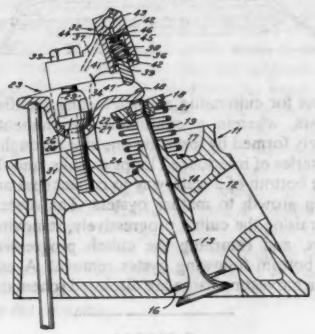


An internal combustion engine having a cylinder head positioned over the end of a combustion chamber with the cylinder head having primary and secondary induction passages positioned therein. An induction valve, including a valve stem and a valve head, is reciprocably mounted within the cylinder head and a tube is preferably press fitted in a bore in the cylinder head. The primary induction passage communicates with the exterior of this tube and the secondary passage communicates with the interior of the tube. This tube extends to a position closely adjacent to, or in engagement with, the head of the induction valve when the valve is in the closed position, thereby providing a good seal between the primary and secondary induction passages when the induction valve is closed.

3,678,906
DAMPED VALVE TRAIN SYSTEM

Louis L. Repko, Detroit, and Richard C. Ronzi, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 4, 1970, Ser. No. 95,220
Int. Cl. F01l 1/16, 1/18
U.S. Cl. 123—90.47 14 Claims

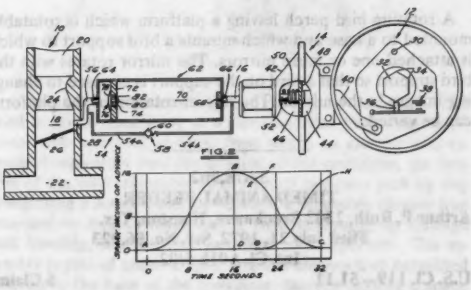


A valve train having a damping means acting on one of the valve train elements prior to valve closing to reduce "valve toss" or "bounce" characteristically present at exceptionally high engine speeds. The damping means may comprise a hydraulic or pneumatic device having a collapsible chamber from which flow is restricted and which reduces the velocity of the valve train elements just prior to valve closing.

3,678,907
ENGINE SPARK TIMING SYSTEM

Richard D. Vartanian, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 30, 1970, Ser. No. 59,500
Int. Cl. F02p 5/04
U.S. Cl. 123—117 A 8 Claims



A mechanical apparatus between the carburetor spark port and distributor servo includes a main one-way check valve is parallel flow relationship with a vacuum reservoir, the reservoir containing an orifice at the servo end and a one-way orificed check valve at the spark port end, the reservoir provid-

ing a quick recovery of the engine spark timing setting after rapid acceleration followed by deceleration and reacceleration conditions of operation, to improve fuel economy, the main check valve quickly lowering the spark advance setting during rapid accelerations, and the orifices providing a delayed spark advance during light accelerations.

3,678,908

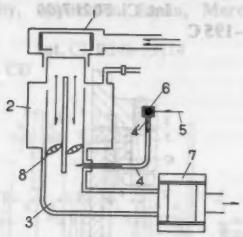
METHOD AND APPARATUS FOR INCREASING OUTPUT OF CAR ENGINE AND PURIFYING EXHAUST GAS

Akio Ito, 518, Odo, Saitama-ken, Yono-shi, Japan

Filed March 19, 1970, Ser. No. 21,038

Int. Cl. F92m 23/00

U.S. Cl. 123—119 D **5 Claims**



A method and apparatus for increasing the output of an internal combustion engine characterized in that in the fuel system of the internal combustion engine consisting of an air cleaner, a carburetter and a manifold, there is provided a secondary air pipe halfway between said carburetter and manifold so as to allow intake of a suitable amount of secondary air, and a weak radioactive material (for example a natural radioactive ore) is disposed at the inlet of said air pipe so as to apply weak radiation to the air taken in through said pipe.

3,678,909

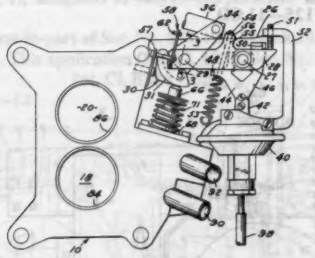
EXHAUST GAS RECIRCULATION CONTROL MECHANISM

Thomas D. Barker, Detroit, and William K. Ojala, Dearborn Hts., both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1970, Ser. No. 100,112

Int. Cl. F02m 25/06

U.S. Cl. 123—119 A **18 Claims**



A lever is mounted pivotally on a spacer located between the carburetor and the intake manifold of a reciprocating internal combustion engine and a cam is mounted pivotally on the lever. The cam positions a poppet-type valve that determines exhaust gas recirculation rate. A vacuum motor responding to intake manifold pressure acts on the lever to position the cam indirectly and carburetor throttle linkage is connected directly to the cam.

3,678,910

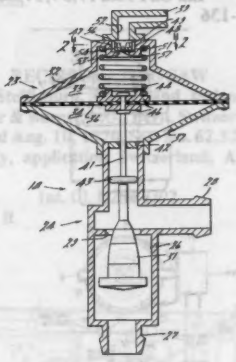
CONTROL VALVE FOR POSITIVE CRANKCASE VENTILATION SYSTEM

N. William Marlett, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed March 31, 1971, Ser. No. 129,833

Int. Cl. F02f 9/00; F02m 25/06

U.S. Cl. 123—119 B **6 Claims**



A control valve for a positive crankcase ventilation system of an internal combustion engine. The valve includes a pressure differential decay means which retards valve modulation during accelerations from low speeds, thereby minimizing the leaning effect that the positive crankcase ventilation system otherwise would have on the combustible mixture.

3,678,911

SWITCHING-OFF DEVICE FOR INTERNAL COMBUSTION ENGINE FED BY A DUAL-BODY CARBURETOR

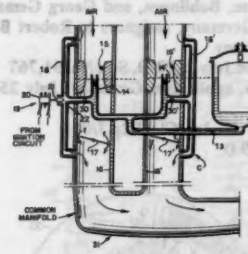
Jean-Pierre Soubis, La Celle Saint Cloud, France, assignor to Chrysler France, Paris, France

Filed June 29, 1970, Ser. No. 50,626

Claims priority, application France, July 16, 1969, 6924230

Int. Cl. F02m 11/02; F02b 77/08

U.S. Cl. 123—127 **5 Claims**



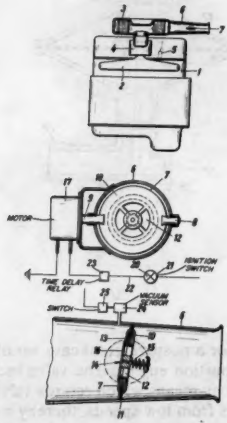
Modern high-performance combustion engines have the drawback of continuing to run at idling speed during a certain period when switched off. A known method used to avoid this phenomenon consists in shutting off the arrival of gasoline into the idling circuit of the carburetor.

According to the invention when the internal combustion engine is fed by a dual-body carburetor, it is provided with only one member for stopping the feeding with fuel on only one of the two idling tubes of the carburetor and actuated simultaneously with the switching off of the engine ignition circuit.

3,678,912
INSTALLATION IN INTERNAL COMBUSTION ENGINES FOR PREVENTING THE ESCAPE OF FUEL OUT OF THE MIXTURE FORMATION SYSTEM INTO THE ATMOSPHERE

Paul Hensler, Munchingen, Germany, assignor to Firma Dr.-Ing. h.c. F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed April 9, 1970, Ser. No. 26,863
Claims priority, application Germany, April 11, 1969, P 19 18 382.5
Int. Cl. F92m 17/34, 37/00
U.S. Cl. 123—136 17 Claims

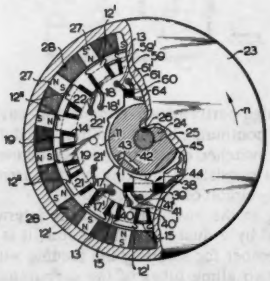


An installation for internal combustion engines to prevent the escape of fuel out of the mixture formation system into the atmosphere, in which combustion air is taken out of the atmosphere by way of a suction pipe with an air filter connected to its inlet and is enriched with fuel, prior to the entry into the combustion spaces, by means of a fuel-feed installation, whereby a closure valve is arranged on the inlet side of the air filter and is actuated by an adjusting device adapted to be automatically engaged in dependence on at least one operating condition of the internal combustion engine.

3,678,913
CURRENT GENERATOR AND ELECTRONIC IGNITION CIRCUIT

Kurt Zimmermann, Boblingen, and Georg Gemander, Nurnberg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 2, 1970, Ser. No. 51,767
Claims priority, application Germany, July 25, 1969, P 19 37 827.9
Int. Cl. F02p 3/06
U.S. Cl. 123—149 D 13 Claims

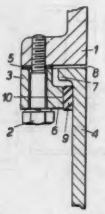


Generator comprises a stator with armature and charge windings on its outer circumference and at least one control winding on its inner circumference, and a rotor with magnets of alternating polarity for inducing currents into the armature and charge windings. The rotor hub has a magnet for inducing a control voltage across the control winding, which voltage operates a thyristor for controlling the discharge of a capacitor charged by the charge winding, the capacitor discharging through the primary of a spark coil.

3,678,914
RUBBER MOUNTED SUMP

Nicholas Martin F. Vulliamy, Peterborough, England, assignor to Perkins Engines Limited, Peterborough, England

Filed March 19, 1970, Ser. No. 20,948
Claims priority, application Great Britain, March 28, 1969, 16,286/69
Int. Cl. F02f 7/00
U.S. Cl. 123—195 C 9 Claims

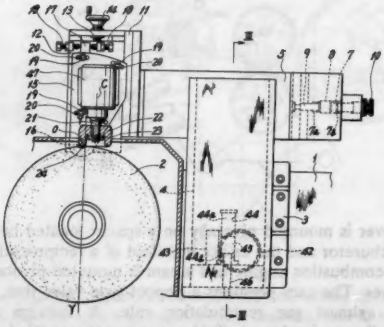


A peripheral frame is bolted to the engine block of an internal combustion engine and, by means of a peripheral elastomeric interlay mounts a cover on the engine block. Interfitting flanges on the frame and cover are spaced from each other in a manner that allows a metal-to-metal abutment of the engine block and cover and support the cover in case of a mechanical failure of the interlay. The interlay is disposed between the interfitting flanges and provides damping of audio frequency vibrations emanating from the engine while at the same time providing an effective seal between the engine block and the cover.

3,678,915
TRUING DEVICE FOR GRINDING WHEEL WITH ROTATING CUP-SHAPED TRUING CUTTER

Makoto Kikuchi, Kariya, Japan, assignor to Toyoda Machine Works, Limited, Kariya-shi, Japan

Filed Feb. 5, 1971, Ser. No. 112,911
Claims priority, application Japan, Feb. 11, 1970, 45/11783
Int. Cl. B24b 53/14
U.S. Cl. 125—11 CD 9 Claims



A cup-shaped truing cutter device is provided which precisely forms various selective contours, such as a flat, con-

cave, or convex contour, on the peripheral surface of a grinding wheel according to the radial inclination of the axis of the device in the vertical dividing plane passing through the grinding wheel normal to the axis of the wheel. The cup-shaped truing cutter is tangentially fed to thereby precisely true the peripheral surface of any grinding wheel by a constant crowning amount without relation to the grinding wheel diameter under the constant inclination of the axis thereof.

3,678,916

APPARATUS FOR DRESSING SIDE SURFACES OF GRINDING WHEELS

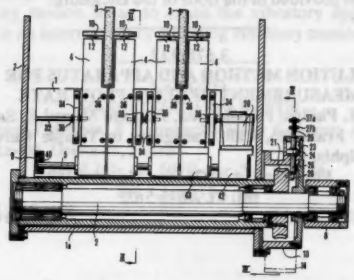
Tsuneji Fujii, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Japan

Filed March 1, 1971, Ser. No. 119,496

Claims priority, application Japan, March 30, 1970, 45/30465

Int. Cl. B24b *53/14*

U.S. Cl. 125—11 CD **8 Claims**



In apparatus for dressing side surfaces of a grinding wheel, there are provided a base swung in a plane parallel to the side surfaces of the grinding wheel, a pair of rotary dressing tools journalled by a pair of supporting members mounted on the base on both sides of the grinding wheel, and a drive mechanism for rotating the dressing tools. In addition, there are further provided adjusting means for moving the supporting members and the rotary dressing tools toward and away from the side surfaces of the grinding wheel without the necessity of operating the drive mechanism.

3,678,917

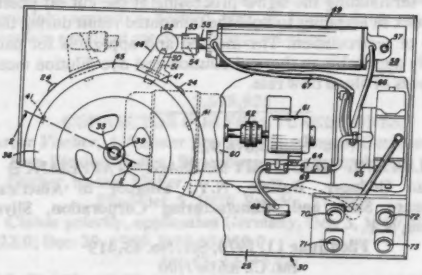
DEVICE FOR TENSIONING AN ANNULAR SAWBLADE

David L. Bender, Henrietta, and Richard L. Lane, Penfield, both of N.Y., assignors to Kayex Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 809,498, March 24, 1969, abandoned. This application Oct. 12, 1970, Ser. No. 79,912

Int. Cl. B28d *7/00*

U.S. Cl. 125—12 **5 Claims**



A device for tensioning in a radial direction an annular sawblade contained in an assembly comprising a plurality of annular rings. The sawblade is retained in the assembly by a mount ring, a tension ring and a lock ring. The assembly is fixed in position in the device by means of the mount ring. The tension ring is coupled to a torque-producing means whereby, when the tension ring is rotated relative to the mount and lock rings, an annular extension on the tension ring will be moved axially and into engagement with the surface of the sawblade. The force applied to the surface of the sawblade by the annular extension will cause an annular deformation in the form of a rib to be produced which results in the sawblade being tensioned in a radial direction.

3,678,918

RECIPROCATING SAW

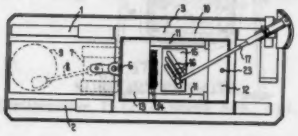
Alfred Stauffer, Steffisburg, Switzerland, assignor to Maschinenfabrik Meyer & Burger A.G., Bern, Switzerland

Filed Aug. 10, 1970, Ser. No. 62,521

Claims priority, application Switzerland, Aug. 25, 1969, 12840/69

Int. Cl. B28d *1/02*

U.S. Cl. 125—16 R **10 Claims**



A reciprocating saw having a holding frame and detachably inserted therein a separate tension frame equipped with sawblades and supported in the holding frame in a fixed position by straightening means. With the machine there are associated preferably at least two tension frames, which at will may be inserted in the machine and prepared apart from the same for later use therein, respectively.

3,678,919

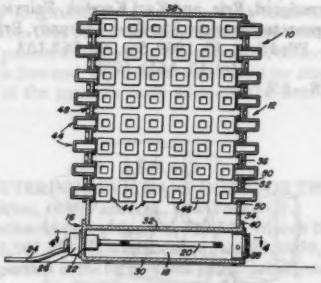
CLAY AREA HEATER

Carlo M. Marchesi, 31 Winter St., Lynn, Mass.

Filed Oct. 16, 1970, Ser. No. 81,372

Int. Cl. F24c *1/08*

U.S. Cl. 126—92 R **8 Claims**

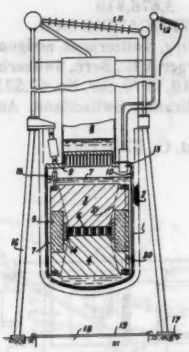


In combination with an underlying heating unit, an enlarged chamber defining housing incorporating peripheral walls having multiple rows of hollow outwardly extending projections which internally communicate with the chamber. The device is constructed of baked clay and capable of storing and radiating heat over extended periods of time.

3,678,920
RADIOISOTOPE HEAT SOURCE BOILER FOR POWER GENERATORS

Michel Cohen, Paris; Pierre Lavigne, Grenoble, and Robert Sauvagnac, Antony, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed June 9, 1970, Ser. No. 44,804
Claims priority, application France, June 17, 1969, 6920188
Int. Cl. G21c *15/18*
U.S. Cl. 126—344 10 Claims

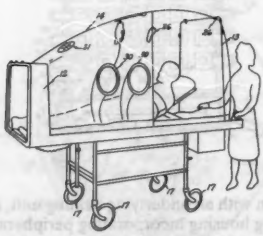


The boiler essentially comprises a vessel of revolution having an external heat-insulating covering and a radioisotope source which is housed within the vessel. The source is constituted on the one hand by two blocks of revolution formed of material which is capable of providing a good biological shield. A peripheral recess is formed in each block in order to accommodate a tightly-fitting annular member, said member being constructed of material having a radioactive absorption coefficient which is higher than that of the blocks. The source is constituted on the other hand by a charge of radioelements formed by a series of clad radioactive plates arranged in stacks. The complete radioisotope source unit is immersed in a cooling liquid. The top end-wall of the boiler proper constitutes the hermetic cover of the vessel. A safety member which is welded to the upper block and to the cover ensures falling of the vessel and of the radioisotope source in the event of dangerous overheating.

3,678,921
PORTABLE ISOLATOR

Thomas Brendgord, Erie, and Karl Kereluk, Fairview, both of Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Sept. 19, 1969, Ser. No. 862,153
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R 11 Claims

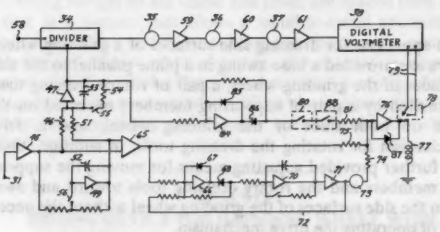


This specification discloses a portable enclosure for protecting the contents of the enclosure, for example, patients, from the surrounding environment. The enclosure has a wheeled stretcher base on which is mounted a frame which contains life support equipment. The main frame has spaced U-shaped rods having their lower ends attached to the floor and a rigid door frame supported on one end of the frame. An X-ray floor is supported on the frame. A flexible transparent bag with reinforced bottom is supported on the floor, and the end of the bag is clamped to the door frame. A stretcher slide is supported in the bag above the first floor. The first floor is X-ray penetrable providing a space for air to circulate between the two floors. A stretcher slides on the top floor and is of a length suitable to support a large man. The stretcher support is hinged at its center so that a patient can be lifted to a sitting position. An X-ray film support is attached to the lower part of the upswinging half of the stretcher. An X-ray camera may be supported on top of the door frame and outside the cover and the patient X-rayed through the cover. A swinging door is supported in the door frame through which the patient and stretcher may be removed from the enclosure. The door frame has means for attaching it to the door of a clean room or the like into which the patient is to be transferred. An inlet for sterile air is provided in the floor of the enclosure.

3,678,922
DILUTION METHOD AND APPARATUS FOR MEASUREMENT OF FLUID FLOW RATE

Charles M. Philips, Philadelphia, Pa., and Miguel E. Sanmarco, San Francisco, Calif., assignors to Temple University, Philadelphia, Pa.

Filed Jan. 14, 1971, Ser. No. 106,340
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 F 10 Claims



A dilution technique for measuring fluid flow rate within a circulating fluid system is disclosed, comprising continuous processing of a response signal following injection of an injectate into the fluid system, the process being terminated at a cut off point which is determined in terms of the peak of the response signal. The cut off point of the response signal is determined to compensate for error normally introduced due to recirculation. Apparatus is disclosed for carrying out the steps of the process, comprising an integrator-divider for processing the response signal, a peak detector and comparator for terminating the signal processing at the cut off point, and a lock in amplifier to hold the computed result during the period of recirculation. The method and apparatus for particularly applicable to thermal dilution and dye dilution measurements of blood flow rate.

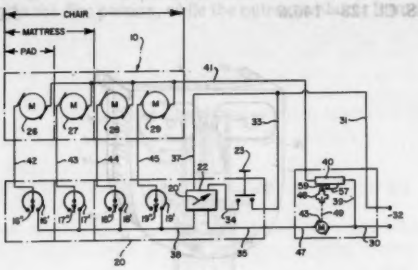
3,678,923
PULSATING VIBRATORY MASSAGING APPLIANCE

Norman Oetinger, Buffalo, N.Y., assignor to American Massage Sales and Manufacturing Corporation, Silver Creek, N.Y.

Filed June 11, 1970, Ser. No. 45,419
Int. Cl. A61h *1/00*
U.S. Cl. 128—33 6 Claims

A vibratory appliance such as a chair, mattress or pad adapted to be placed in contact with a person's body to pro-

vide an intermittent vibratory massaging action including at least one vibration producing device mounted on the appliance for imparting a vibratory motion thereto, and electro-



mechanical control means for cyclically interrupting the vibratory motion so as to cause the vibratory appliance to produce an intermittent or pulsating vibratory motion.

3,678,924

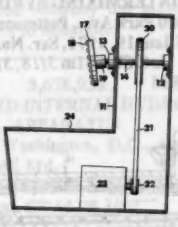
MASSAGING APPARATUS

Shinichiro Fujimoto, 8 Hannancho Naka 6-chome, Abeno-ku, Osaka-shi, Osaka-fu, Japan

Filed July 10, 1970, Ser. No. 53,875

Int. Cl. A61h 7/00

U.S. Cl. 128—46 **1 Claim**



An operating mechanism for a massaging apparatus comprising a driving shaft revolved through a pulley with movement of a belt driven by an electric motor, said driving shaft having a slightly curved front end which is secured through bearing to a pressing plate having formed on its surface a plurality of round projections, wherein rotation of said driving shaft is transmitted to said pressing plate through bearing not in the form of rotation but in the form of swinging motion which changes inclination of said pressing plate such that through variation of said inclination, the round projections on the surface of said pressing plate are rubbingly pressed alternately against a desired part of human body so as to produce excellent massotherapeutical effect.

3,678,925

CONNECTOR FOR FRACTURED BONES

Artur Fischer, Altheimer Str. 219, Tumlingen, Germany, and Jean-Nicolas Muller, Strassburg, France, assignors to said Fischer, by said Muller

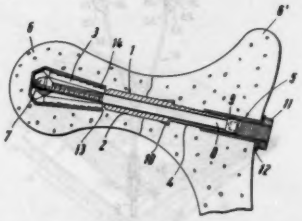
Filed Oct. 1, 1970, Ser. No. 77,267

Claims priority, application Germany, Oct. 3, 1969, P 19 49 922.0; Dec. 29, 1969, P 19 65 350.0

Int. Cl. A61f 5/04

U.S. Cl. 128—92 BB **6 Claims**

A sleeve is to be inserted into a fractured bone bridging the fracture thereof. The leading end portion is then to be located in one bone fragment and the open trailing end portion is to communicate with the exterior of the other bone fragment. An expander screw is threaded into the sleeve and has a head which bears exclusively upon an annular shoulder provided on the sleeve. The front end of the expander screw serves, by its configuration or by cooperation with an expander element, for



expanding the leading end of the sleeve so as to retain it in the bone fragment in which it is located. A cap screw is threadedly connected with and closes the trailing end portion of the sleeve, bearing upon the other bone fragment and thereby drawing the two fragments together via the intermediary of the sleeve.

3,678,926

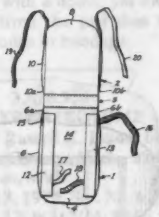
SUPPORT PILLOW

Martha L. Strittmatter, 1532 Glenbeck Ave., Apt. #3, Dayton, Ohio

Filed Sept. 16, 1970, Ser. No. 72,704

Int. Cl. A61f 5/40

U.S. Cl. 128—94 **9 Claims**



A pillow to support a limb of a patient comprising first and second pillow sections joined in end-to-end relationship by a flexible web. The first pillow section has a pair of elongated, flexible, rail-like members affixed to its upper surface and defining a longitudinally extending, limb-receiving channel thereon. The first pillow section is provided with means to retain the patient's limb within the channel. The second pillow section at is free end, is provided with means for attaching it to a portion of the patient's body adjacent the limb to be supported.

3,678,927

INTRA UTERINE DEVICE AND INJECTOR THEREOF

Samuel Solchet, 1088 Park Ave., New York, N.Y.

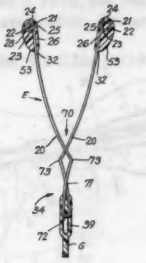
Continuation-in-part of Ser. No. 713,825, March 18, 1968, Pat. No. 3,507,274. This application Jan. 26, 1970, Ser. No. 5,466The portion of the term of this patent subsequent to April 21, 1987, has been disclaimed.

Int. Cl. A61f 5/46

U.S. Cl. 128—130 **1 Claim**

The present disclosure relates to an intra uterine device and a means for injecting the device into the uterine cavity with assurance that there will be no harm to the interior tissues and with the further assurance that it will be properly injected without injury to the user and with assurance that it will be in proper position.

The intra uterine device consists of two outwardly springing inert metal wires, such as chromium alloy wires, nickel alloy wires, or preferably stainless steel wires turned inwardly at



their outer ends to form loops, or ended with a small engagement, which tend to spring apart and are joined at their base portions to form a Y-shaped structure.

3,678,928

HYGIENIC DEVICE FOR DETECTING UNINTENTIONAL URINATION

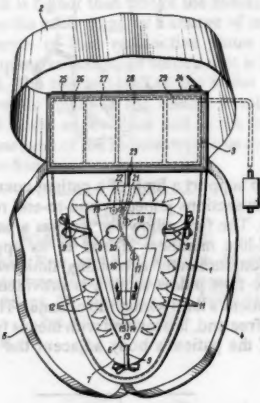
Alexander Mozes, 89 Berkinshaw Crescent, Don Mills, 404, Ontario, Canada

Filed Feb. 19, 1970, Ser. No. 12,631

Claims priority, application Germany, Feb. 25, 1969, P 19 09 261.6; Feb. 25, 1969, P 19 09 262.7

Int. Cl. A61b *19/00*

U.S. Cl. 128—138 16 Claims



A hygienic device for detecting unintentional urine flow comprises an alarm device, an electronic device for operating the alarm device and batteries all of which are supported preferably in a waist belt to which is attached a cap closely fitting around the urine outlet of a patient wearing the device, and urine sensing electrodes and stimulator electrodes disposed in the cap for triggering the alarm device and for supplying stimuli to the patient, a position sensitive switch being provided arranged to switch off the device automatically when the patient assumes an upright position. The alarm device may emit an audible sound, and an overriding switch may be provided for manual control of the device.

3,678,929

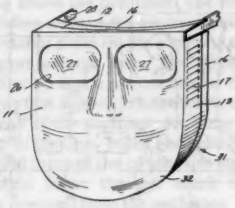
FACE MASK

Judy G. Buscher, 5226 B St., Omaha, Nebr.

Filed March 2, 1970, Ser. No. 15,705

Int. Cl. A62b *23/02*

U.S. Cl. 128—146.6 5 Claims



A face mask adapted to be worn over the face of a wearer and covering at least the eyes and the nose of the wearer thus protecting the eyes and lungs from pollutants, the mask comprising, a frame held in position by a pair of bows extending to beyond the ears of the wearer and having glass covered opening through which the wearer can see, inlet openings formed in the frame and covered by detachably secured filters for filtering air inhaled by the wearer and to permit partial exhausting of the air from the mask during exhalation, and an exhaust opening formed in the mask having an exhaust valve mounted thereover to provide an additional outlet for exhaust purposes only.

3,678,930

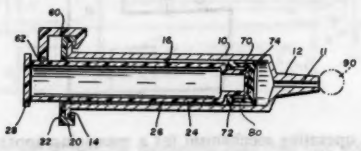
INTERMIXING SYRINGE

Boris Schwartz, 400 Park Ave., Patterson, N.J.

Filed Jan. 19, 1971, Ser. No. 107,645

Int. Cl. A61m *5/18, 5/22*

U.S. Cl. 128—218 M 11 Claims



An intermixing syringe provides for the isolated storage of two components prior to their being mixed which is usually just before injection of the product. This syringe has an outer barrel and a hollow plunger slidable therein with the barrel portion forward of the piston providing one chamber of determined size and the plunger provides the other chamber. The plunger is provided with and carries on its forward end a piston having spaced, ring-like sealing surfaces. The plunger is a closed hollow cylinder having apertures at its forward end and in its outer wall near its rear end. Tear members are attached to the plunger at these apertures to seal and make these apertures fluid tight. In the piston is formed a fluid passageway extending from the interior of the piston to the outer piston surface. The barrel has a smooth straight-bored inner surface and is absent any undercuts.

3,678,931

SYRINGE

Milton J. Cohen, 7111 Connecticut Ave., Chevy Chase, Md.

Filed June 9, 1970, Ser. No. 44,742

Int. Cl. A61m *5/00*

U.S. Cl. 128—220 11 Claims

A syringe formed of inner and outer tubular members with the inner member adapted to be telescoped within the outer

member and sealed therefrom by a sealing assembly comprising a disc member having at least one opening therethrough communicating with the inner tubular member and a flexible seal having a disc portion having openings therethrough, with the openings in the disc member being laterally offset from the opening in the disc portion, while the outer member is formed

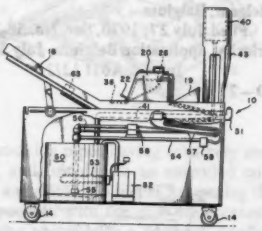
with a rupturable seal having an injection needle in alignment therewith for rupture in use with the inner tubular member adapted to contain a liquid carrier and the outer tubular member adapted to carry a solid medicant to be taken up with the carrier for injection whereby the materials are freshly mixed immediately prior to injection.

3,678,932

SELF-CONTAINED INTERNAL HYDROTHERAPY APPARATUS

Rose Marie Hudson, Washington, D.C., assignor to Hudall Corporation, Bethesda, Md.

Filed March 6, 1970, Ser. No. 17,074
Int. Cl. A61m *3/00*
U.S. Cl. 128—227 **7 Claims**



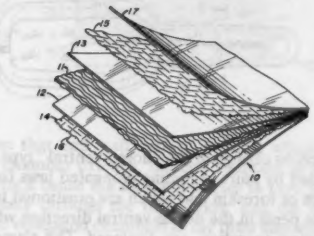
A self-contained internal hydrotherapy apparatus for treatment of human patients comprising a mobile cabinet having a generally planar top surface designed to accommodate a reclining patient, a treatment system capable of infusing a desired treating solution into the body orifices and additionally externally cleansing the rectal and genital areas of the patients body, a self-contained waste disposal system, a self-contained fresh water system and an internal electrical system. The applicator elements of the treatment system are removable from the cabinet for treatment of patients confined in bed.

3,678,933

SURGICAL SPONGE OR BANDAGE

Francis C. Moore, and Leon A. Perkinson, both of Indianapolis, Ind., assignors to Moore-Perk Corporation, Indianapolis, Ind.

Filed July 17, 1970, Ser. No. 55,842
Int. Cl. A61f *13/00*
U.S. Cl. 128—296 **12 Claims**



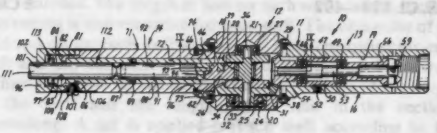
Layers of thin thermoplastic film are brought into contact with opposite surfaces of superposed layers of absorbent material, such as sheets of fibrous crepe paper of facial quality, rayon fibers, or flexible polyurethane foam. The layers of plastic film are covered with a loosely-woven cotton scrim or gauze (or with spun-bonded nylon). Additional layers of the thin plastic film may then cover the exterior surfaces of the scrim layers. The multi-layer article thus formed is then compressed and heated to melt the plastic films. The melted plastic bonds the scrim to the paper, separating as it melts to communicate the absorbent paper core with the exterior of the pad and to gather itself about the threads of the scrim in wrapping, covering engagement. The resultant pad is highly absorbent upon contact with a liquid, yet the absorbed liquid will not "bleed" back from the pad thus making it highly desirable as a surgical sponge or bandage.

3,678,934

POWER OSTEOTOME

Wayne N. Warfield, and Russell K. Eaton, both of Kalamazoo Township, Kalamazoo County, Mich., assignors to Stryker Corporation, Kalamazoo, Mich.

Filed Aug. 13, 1970, Ser. No. 63,460
Int. Cl. A61b *17/14*, *17/16*; F16h *57/02*
U.S. Cl. 128—317 **8 Claims**

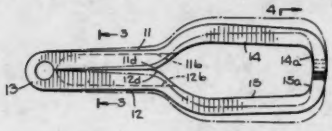


A handpiece has an elongated tubular housing which is connectable at one end either to an air motor or to a sheath for a motor driven cable and which is adapted for supporting a tool, such as an osteotome or a saw blade at the other end thereof. Between these two are located an input drive mechanism, a crank mechanism and an output driven mechanism whereby the rotational force of the motor or cable is converted into a reciprocation for driving the osteotome or the saw.

3,678,935
CIRCUMCISION CLAMP

Harry Bronstein, 2311 Avenue J, Brooklyn, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,468
Int. Cl. A61b *17/12, 17/08;* A44b *21/00*
U.S. Cl. 128—325 8 Claims



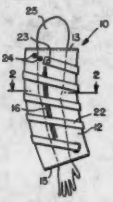
Circumcision clamps of the "dorso-ventral" type, which are characterized by pairs of mating elongated jaws for clamping the prepuce or foreskin and which are positioned transversely of the glans penis in the dorsal-ventral direction when used in a circumcision operation, are disclosed. The clamps are one-piece structures which can be made in either reusable or disposable form. The two jaws of each such clamp are interconnected at one end by a solid hinge integral therewith which normally biases them into their open state, and at their other ends have respective preferably laterally offset arms integral therewith and extending generally longitudinally therefrom for a sufficient distance to provide the leverage required to enable the jaws to be pressed together into their closed state against the force of the hinge and with sufficient force to crush and produce at least almost complete hemostasis in a prepuce clamped between the jaws. At their free ends, the arms are provided with interengageable hooks or ratchet elements to enable the respective jaws to be locked in their closed position. In the use of such a clamp, the plane of the jaws should be oriented oblique to the axis of the penis, in conformity with the physical shape of the glans, to enable a greater amount of the prepuce and mucosa to be cut off dorsally of the glans than ventrally thereof and to avoid cutting unnecessarily into the frenulum. To make the operator cognizant of this requirement and to facilitate such use, the clamp is preferably made with the plane of the jaws oriented oblique to the plane of the arms.

This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,678,936
ICE BAG FOR TREATING ATHLETES

Wayne A. McCormick, P.O. Box 35, Dewitt, Portsmouth, N.Y.

Filed Dec. 3, 1969, Ser. No. 881,684
Int. Cl. A61f *7/00*
U.S. Cl. 128—402 1 Claim

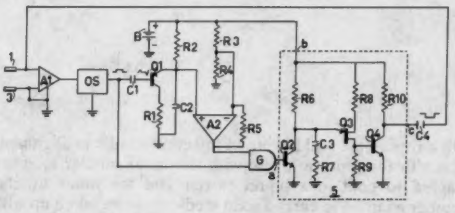


In one embodiment of this invention two sleeves of rubberized flannel are disposed one within the other with their opposite ends fastened together but spaced from one another along their lengths so that they form a hollow jacket for holding cracked or crushed ice. The arm or leg to be treated is inserted into this jacket. The rubber sides of the inner and outer sleeves face one another so that the jacket is water-impervious. A zipper-closed opening in the outer sleeve permits easy insertion of ice into the jacket and removal of ice and water therefrom. An elastic strap attached at one end, and snap fastened at its other end to the outside of the outer sleeve and adapted to be wound helically around the jacket allows some pressure to be applied to the ice pack. For treating other parts of the body, which cannot be inserted into a jacket a roll for holding ice may be formed from rubberized fabric and wrapped around the torso, thigh, or other part to be treated and the elastic strap or straps are drawn tight.

3,678,937
DEMAND CARDIAC PACER WITH INTERFERENCE PROTECTION

Addison D. Cole, Natick, and Roger S. Smith, North Andover, both of Mass., assignors to Adcole Corporation, Waltham, Mass.

Filed June 1, 1970, Ser. No. 41,880
Int. Cl. A61n *1/34*
U.S. Cl. 128—419 P 17 Claims

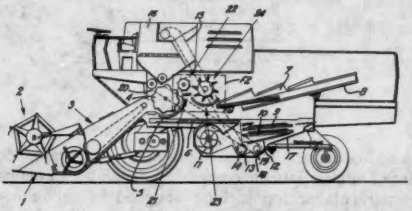


A demand cardiac pacer comprising a relaxation oscillator for applying hart-stimulating pulses to a pair of electrodes at a rate somewhat less than the lowest rate of natural heartbeats, and a timing circuit for measuring the interval between voltage pulses on the electrodes produced either by the oscillator, by natural heart signals, or by noise signals, for disabling the oscillator when natural heart pulses are received at a rate in the normal range, and for enabling the oscillator in the presence of noise signals above a certain frequency range.

3,678,938
SEPARATOR DEVICE FOR COMBINE HARVESTERS

Frans J. De Coene, Zedelgem, Belgium, assignor to Clayson N.V., Zedelgem, Belgium

Filed July 27, 1970, Ser. No. 58,376
Claims priority, application Belgium, July 30, 1969, 49,351
Int. Cl. A01f *12/22*
U.S. Cl. 130—27 E 11 Claims



A conventional combine having a threshing cylinder and concave is provided with a beater and a separating concave and cylinder to the rear of the beater and in front of conventional straw walkers.

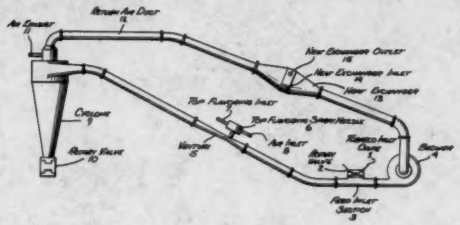
3,678,939
METHOD OF TREATING TOBACCO WITH FLAVORANTS IN A PNEUMATIC SYSTEM

Robert L. Key, III, and Melvin G. Christy, both of Durham, N.C., assignors to Liggett & Meyers Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 778,383, Nov. 25, 1968, Pat. No. 3,548,838. This application Nov. 13, 1970, Ser. No. 89,296

Int. Cl. A24b *03/12, 15/04*

U.S. Cl. 131—144 3 Claims



This disclosure is directed to a continuous method of applying additives to tobacco in a closed system. The product obtained does not require the customary bulking operation. In carrying out the method the tobacco, which is at a temperature of between 130°–180° C, is fed into a pneumatic system and carried by air blown within the conduit of the system to a point downstream from the feedin at which point flavoring solution is dispersed within the tobacco mass. The tobacco is then separated from the air mass and the air, which is reduced in temperature to about 50° to 70° C., is then recirculated in the conduit to come into contact with a fresh supply of hot tobacco.

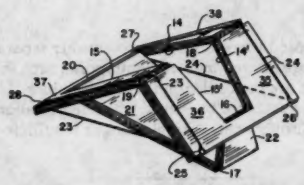
3,678,940
SMOKING PIPE HOLDER

Sigmar E. Sobczak, 3750 N. Mozart St., Chicago, Ill.

Filed Feb. 9, 1971, Ser. No. 114,003

Int. Cl. A24f *13/22*

U.S. Cl. 131—260 11 Claims



A holder for smoking pipes having relatively movable parts hinged together, and foldable to an extended configuration, providing a base and above it a recess for retaing the bowl of a pipe in upright position with the pipe stem extending out of the recess, and also operable to a flattened configuration for convenient portability in a pocket of the smoker.

3,678,941
TOBACCO SMOKE FILTER ELEMENT AND METHOD FOR MAKING

Ronald L. Dixon, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed April 5, 1971, Ser. No. 131,326

Int. Cl. A24d *01/04*; A24f *07/04, 13/06*

U.S. Cl. 131—261 B 11 Claims

Tobacco smoke filter element comprising a porous filter body having an outer wall surface and two end wall surfaces and being adapted to be provided with an overwrap. The porous filter body is provided with two elongated chambers, each chamber being enclosed along its length by the porous filter body and extending from the surface of the outer wall into the filter body and through the surface of an end wall different from that end wall surface through which the other elongated chamber extends, thereby resulting in smoke flow patterns which cause the smoke particles to flow both axially and traversely through the filter body; and the method for forming the elongated chambers in the filter element.

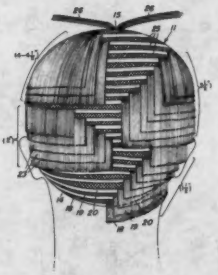
3,678,942
METHOD OF MAKING PRECUT AND PRESET WIG AND PRECUT AND PRESET WIG

Dominic C. Abbott, Pittsburgh, Pa., and Godfrey Chen, Kowloon, Hong Kong, assignors to Abbott Tresses, Inc., Pittsburgh, Pa., by said Dominic C. Abbott

Continuation of Ser. No. 823,400, May 9, 1969, abandoned. This application Sept. 4, 1970, Ser. No. 69,984

Int. Cl. A41g *3/00*

U.S. Cl. 132—5 14 Claims



An already machine made wig is cut and set as desired and styled as necessary for a desired effect. The wefts are each removed from the wig foundation and their length and location recorded. The length of hair on each weft and the sections therealong is also recorded for each weft. The character of the curl and set for each weft so removed is also recorded for each weft and any variation of the sections therealong. Then wefts of hair are made up according to the recordings of the length of the weft and the length of the hair in the sections therealong. A set is applied to each weft according to the record for each weft. Each weft is attached to a wig foundation in accordance with the recordings of locations. The wig can then be further styled as desired by combing and is ready for wear.

3,678,943
PORTABLE HAIR WASHING AND COLORING UNIT

Leona M. Noel, 2884 5th St., and Leo J. Hagel, 416-1207 Douglas St., both of Victoria, British Columbia, Canada

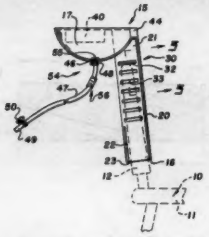
Filed May 13, 1971, Ser. No. 143,041

Int. Cl. A45d *19/06*

U.S. Cl. 132—9 3 Claims

Apparatus for caring for the hair while in a seated position

and having a base attachable to the back of a chair and a wash basin projecting rearwardly of the upper end of the base. The



base is provided with means whereby the unit can be adjusted vertically and there is a neckrest to support the back of the neck of the seated person.

3,678,944

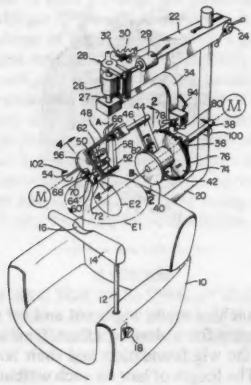
HAIR CUTTING APPARATUS

Ronald G. Berry, 135 E. Woodland, Fort Wayne, Ind.

Filed Aug. 20, 1970, Ser. No. 65,472. The portion of the term of this patent subsequent to March 16, 1988, has been disclaimed.

Int. Cl. A45d *24/36*

U.S. Cl. 132—45 R **19 Claims**



The specification discloses a hair cutting apparatus having a cutting head in which a comb element is presented generally tangentially to the head with the teeth pointing upwardly. A clipper is swingable over the comb element on the side facing away from the head while a rake is swingable in timed relation to the comb element on the side of the comb element facing the head to control the length to which the hair is cut. A support framework for the cutting head causes it to move in succession in angularly related vertical planes passing through the vertical axis of the head from a lower region of the head up to about the center of the top of the head and then back down. During upward movement of the cutting head, the clipper and rake operate while the cutting head advances step by step while downward movement of the cutting head is a continuous motion with the clipper and rake resting in an idle position. A prerecorded program is employed to control all of the motions of the apparatus.

3,678,945

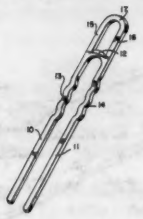
DEVICE FOR HOLDING MODERN ATTRACTIVE HAIRDOS

Diane Greenslit Reynoir, and Penelope Brodtmann Delesdernier, both of New Orleans, La., assignors to Rendel, Inc., New Orleans, La.

Filed Feb. 1, 1971, Ser. No. 111,584

Int. Cl. A45d *8/00*

U.S. Cl. 132—46 R **1 Claim**



The device has prongs for entering a mass of hair, for instance a twist, and a handle for thereupon levering the device over through approximately 180° to spread the twist over the mass of hair at the back of the head and thereupon to drive the very long prongs into the mass of hair to bind and hold the twist to the back of the head and unify such twist with the mass of hair at the back of the head.

3,678,946

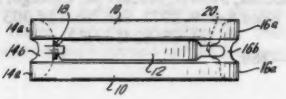
DUAL BARRETTES

Norman Katz, West Hempstead, N.Y., assignor to H. Goodman & Sons, Inc., Kearny, N.J.

Filed June 21, 1971, Ser. No. 154,818

Int. Cl. A45d *8/28*

U.S. Cl. 132—48 R **11 Claims**



The disclosed barrettes have two entirely separate face elements that are interconnected by supports, such that the interconnections are concealed in the wearer's hair. The visual effect is of two separate barrettes, with their relationship nearly preserved during wear. A single tongue is sufficient for "both barrettes".

3,678,947

EYELINER

Joseph R. Ehrlich, New York, N.Y., assignor to Melvin J. Davidson and Bernard M. Zitomer, New York, N.Y.

Continuation-in-part of Ser. No. 831,069, June 6, 1969, Pat. No. 3,605,764. This application July 16, 1970, Ser. No. 55,550

Int. Cl. A45d *40/26*

U.S. Cl. 132—88.7 **16 Claims**

An eyeliner consisting of a marker-type applicator with a substantially rigid tip and a coloring matter of low viscosity dispersions of carbon particles in an aqueous medium. The

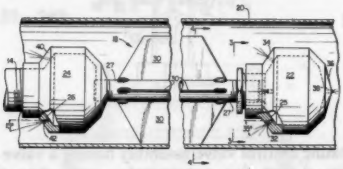
carbon particles are of substantially 0.2 micron or less, do not settle out in the capillaries of the parallelly-oriented fibers of the ink reservoir and pen tip, and are smaller than the diameters of the capillaries of the fibers used in the marker-type applicator. The small-size particles pass between the fibers of the fibrous members of the applicator without clogging the capillaries. The use of such ultra-fine particle size dispersions in such markers permits the making of finer and more accurate lines around the eye than with brush-type applicators.

3,678,948

PIPE CLEANING APPARATUS

Robert H. Hedges, Lima, Ohio, assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed Feb. 26, 1970, Ser. No. 14,316
Int. Cl. B08b *9/04*
U.S. Cl. 134—167 C **6 Claims**



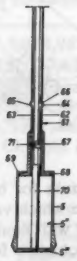
Apparatus for cleaning pipes such as sewer lines and the like in which the cleaning action is effected by jets of water issuing from a self-propelled cleaning tool nozzle assembly. The cleaning tool assembly includes axially spaced forward and rear nozzles from which rearwardly directed jets of water are emitted and a runner or guide structure located between the nozzles and adapted to guide the tool assembly as it is propelled through the pipe. The water jets emitted from the forward nozzle are directed rearwardly at a greater angle relative to the axis of the assembly than the water jets emitted from the rear nozzle.

3,678,949

HANDLE FOR COLLAPSIBLE UMBRELLA

Heinz Weber, Rhineland, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed Nov. 19, 1970, Ser. No. 90,967
Claims priority, application Germany, Nov. 19, 1969, P 19 58 143.2
Int. Cl. A45b *9/02*
U.S. Cl. 135—20 **3 Claims**



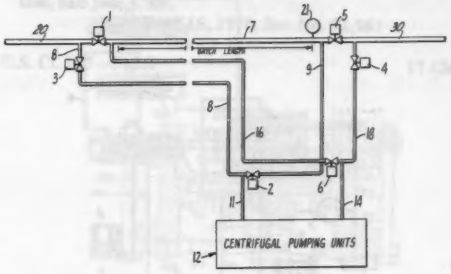
An umbrella having a telescopic stick and a hollow open-ended handle at one end thereof, the handle is axially movable relative to the stick. Dome ribs are hinged to the crown at the other end of the stick and a support structure is articulated between the dome ribs and runners sliding on the stick. When the umbrella is collapsed, the main runner fits within the handle, the dome ribs extend on the outside of the handle and the folded ends of the support structure project into the open end of the handle above the runner.

3,678,950

METHOD AND APPARATUS FOR PUMPING SLUGS OF COOL SLURRY WITHOUT PASSING SLURRY THROUGH THE PUMPING STATION

Harold E. Ragsdale, San Mateo, Calif., assignor to Bechtel International Corporation

Filed Dec. 3, 1970, Ser. No. 94,831
Int. Cl. F04f *1/06*
U.S. Cl. 137—1 **3 Claims**



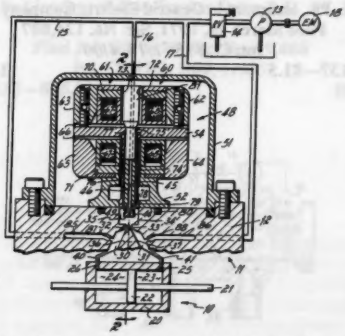
A slurry is drawn into a main pipeline by pumping liquid ahead of it to draw the slurry into the main pipeline. The liquid in the main pipeline is simultaneously forced into a second pipeline to force a slug of slurry ahead of it. When the main pipeline is completely filled with slurry, a slug of liquid is drawn from the first pipeline and is forced into the main pipeline to force the slug of slurry on into the second pipeline.

3,678,951

METHOD AND APPARATUS FOR IMPROVED JET PIPE VALVE

James L. Coakley, Camarillo, Calif., assignor to Abex Corporation, New York, N.Y.

Filed June 15, 1970, Ser. No. 46,244
Int. Cl. F15b *5/00*; G05d *16/00*
U.S. Cl. 137—14 **18 Claims**

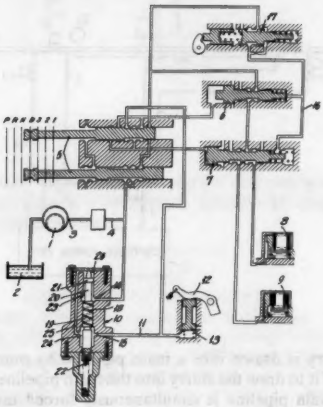


A method and apparatus for increasing the load flow characteristic of a jet pipe valve. The practice of the method and the apparatus is operable to inject fluid under pressure into the two output load channels of the valve so as to amplify the rate of flow through the jet pipe output channels.

3,678,952
PRESSURE FLUID CIRCUIT IN AUTOMATIC TRANSMISSION APPARATUS

Sadanori Nishimura, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1969, Ser. No. 868,405
Claims priority, application Japan, Oct. 22, 1968, 43/76473
Int. Cl. G05d *13/38*
U.S. Cl. 137—53 3 Claims

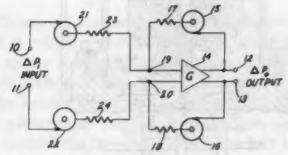


A pressure fluid circuit in an automatic transmission comprises a line pressure circuit connected to the discharge opening of a pump and to an orifice controlled by a valve which in turn is connected to a governor circuit containing a leak valve controlled by centrifugal force corresponding to the speed of the output shaft of the transmission. The valve is constructed to provide a flow resistance such as a throttling effect which is varied by a slide valve member in response to the pressure in the governor circuit in order that the pressure can remain substantially constant and never drop below a minimum pressure necessary to operate the clutches of the transmission.

3,678,953
FLUIDIC LEAD-LAG FREQUENCY RESPONSIVE CIRCUIT

Willis A. Boothe, Scotia, N.Y., and Anthony J. Healey, State College, Pa., assignors to General Electric Company

Filed March 16, 1971, Ser. No. 124,807
Int. Cl. F15c *1/16, 4/00*
U.S. Cl. 137—81.5 14 Claims

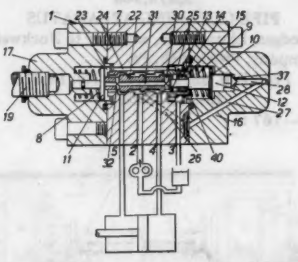


The circuit includes a high gain fluidic amplifier device in a forward circuit portion and a vortex fluidic device in a negative feedback circuit portion connected around the forward circuit. The vortex device may be a passive component utilizing only a control fluid input from the amplifier output, or may be an active component utilizing both the control (tangential) fluid input and a power fluid (radial) input supplied from a source of constant pressurized fluid.

3,678,954
CONTROL VALVE

Fritz Ostwald, Buchschlag; Alfred Bender, Nonn, and Gerhard Hofheim, Taunus, all of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Sept. 9, 1970, Ser. No. 70,804
Claims priority, Germany, Sept. 9, 1969, P 19 45 578.8
Int. Cl. F15b *15/06*
U.S. Cl. 137—106 6 Claims

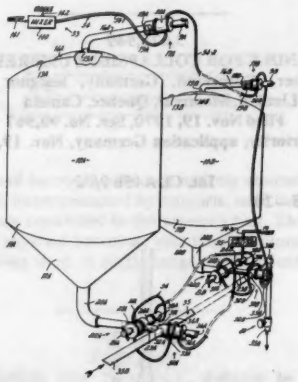


A hydraulic control valve assembly having a valve slide and positioning device for successively positioning the valve against spaced abutments by means of an actuator piston.

3,678,955
ASEPTIC STORAGE AND VALVING SYSTEM

Philip E. Nelson, West Lafayette, Ind., assignor to Purdue Research Foundation, Lafayette, Ind.

Filed May 26, 1970, Ser. No. 40,550
Int. Cl. F16k *51/00*
U.S. Cl. 137—238 6 Claims



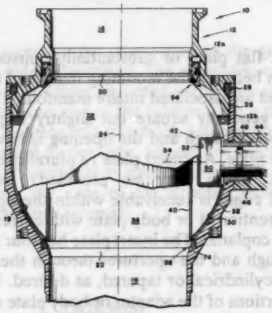
A plurality of storage tanks for bulk storage of materials under aseptic conditions in which valves associated with the tanks have chambers filled with liquid chemical sterilant surrounding movable valve actuators for preventing the influx, via the valve actuators, of contaminants to the material stored in the tanks. The chemical sterilant is unheated to prevent the transfer of heat from the sterilant to the stored material. The sterilant chambers are connected serially to form a cascade between a source of fresh sterilant and a chemical analyzer, with the chambers which become more contaminated in use being connected in the cascade more remote from the fresh sterilant supply. The sterilant chambers are recharged with fresh sterilant by a flow of fresh sterilant from the supply through the cascade, which flow is terminated when the steri-

lant leaving the last chamber of the cascade upon analysis by the chemical analyzer has reached a sterile level indicating that the fresh sterilant has propagated through the cascaded chambers successively flushing the chambers in the cascade of inactive, or stale, sterilant and replenishing the chambers with fresh sterilant. Each sterilant chamber is provided with an inlet passage and an outlet passage located at the bottom and top of the chambers, respectively, such that fresh sterilant enters the bottom of the chamber, forcing inactive, or stale, sterilant from the chamber through the top, insuring complete recharging of the entire chamber with fresh sterilant.

3,678,956
REDUNDANT SEAL BALL VALVE

Joseph A. Ebin, Los Angeles, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Dec. 21, 1970, Ser. No. 100,320
Int. Cl. F16k *5/16*
U.S. Cl. 137—242 **5 Claims**

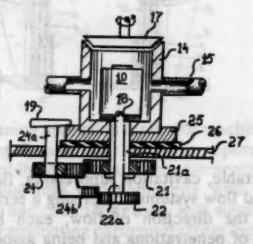


A ball valve, primarily for low pressure applications, such as a toilet waste valve for large passenger aircraft, wherein the fluid passing through the open valve may contain solid objects which could damage conventional valve ball seals. The valve embodies a novel redundant wiper-seal construction for the valve inlet, or both the valve inlet and outlet, having a resilient wiper ring with an end wiping surface, and a resilient seal ring softer and more resiliently compliant than the wiper ring, fixed within a concentric seal groove in the wiping surface between its radially inner and outer edges, such that the wiping surface has a wiping face at the inner side of the ring for wiping contact with the valve ball to shield the softer seal ring against contact by any solid objects entering the valve. The valve also embodies a unique hollow thin-walled valve ball construction.

3,678,957
DISHWASHER DEVICE CAUSING AN APERIODICAL WATER FLOW

Sven Gustaf Nord, 51016 Skene, Sweden

Filed Oct. 14, 1969, Ser. No. 866,340
Int. Cl. F16k *11/07*
U.S. Cl. 137—268 **5 Claims**

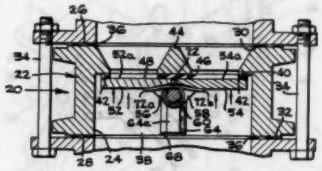


A device adapted for use in a dishwasher and which device causes an intermittent water flow from one or more spray arms of the device. The intermittent water flow is caused by a special form of a detergent container placed inside of the sprinkling device and a good washing result is achieved by an arrangement by which the sprinkling device may be tilted during its rotation.

3,678,958
CHECK VALVE

Lawrence E. Satterwhite; Alton M. Williamson, and George R. Shindler, all of Houston, Tex., assignors to FMC Corporation, San Jose, Calif.

Filed Sept. 16, 1970, Ser. No. 72,961
Int. Cl. F16k *15/00*
U.S. Cl. 137—512.1 **17 Claims**

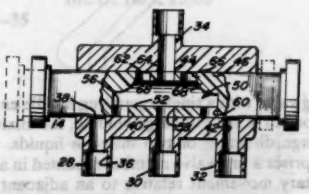


A flapper or wafer-type check valve with two half-disc flapper or wafer closure elements pivotally mounted in the valve body by hinges on a shaft extending transversely of the valve's flow passage, and shaft guides that removably but securely retain the shaft in the valve body while facilitating limited movement of the shaft parallel to the flow passage axis. The curved and straight peripheries of the flappers close against a seat on the valve body comprising an annular shoulder extending into the flow passage and a transverse rib that extends across the flow passage parallel to the shaft. When opening from a closed position, the flappers first lift off the seat in the area of the hinges before they begin to pivot about the shaft, and as the flappers close they come to rest against the hinge area of the seat without sliding or rubbing against it, thereby avoiding wear of the seat. In addition, several different systems for securing the shaft guides to the valve body are disclosed, as are valves with resilient seats mounted on the flappers, on the valve body, and also valves with non-resilient seats.

3,678,959
HAND OPERABLE SELECTOR VALVE

Richard B. Liposky, 69 Dwellington Drive R.D. #3, Valencia, Pa.

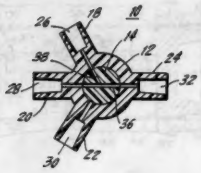
Filed July 30, 1970, Ser. No. 59,468
Int. Cl. F16k *3/00, 11/06*
U.S. Cl. 137—625.11 **10 Claims**



A tubular casing having a longitudinally extending passageway therein receives a valving member. Three inlet ports are formed along one side of the casing. An identical number of orifices are formed in a confronting face of the valving member. The spacing between orifices is such that only one of the inlet ports communicates with a respective orifice in any particular position. The central portion of the valv-

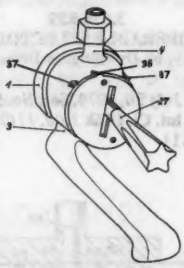
ing member includes a chamber which communicates with the orifices. A plurality of orifices are formed along an oppositely disposed face of the valving member in relation to an outlet port. Thus, in any particular position of the valving member selective communication between one of the inlet ports and the outlet port can be effected.

3,678,960
STOP COCK
Saul Leibinsohn, 11 Hagardom St., Rishon Lezion, Israel
Continuation of Ser. No. 714,644, March 20, 1968, abandoned. This application June 8, 1970, Ser. No. 48,807
Int. Cl. F16k *11/08, 5/02*
U.S. Cl. 137—625.47 **1 Claim**



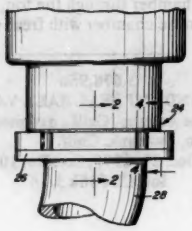
A stop cock type of device for selectively interconnecting a plurality of fluid-carrying ducts in a variety of configurations. The device includes a plurality of outstanding ports which selectively communicate with a rotatable central hub provided with a predetermined configuration of annular passageways which make possible the selection of any one of the variety of flow configurations depending upon the angular position of the valve with respect to the ports.

3,678,961
MIXING VALVE
Manfred Grosche, Gneisenaustr. 33, 2000 Hamburg 20, Germany
Filed March 13, 1970, Ser. No. 19,282
Claims priority, application Germany, March 22, 1969, P 19 14 694.2
Int. Cl. F16k *11/00*
U.S. Cl. 137—636.2 **11 Claims**



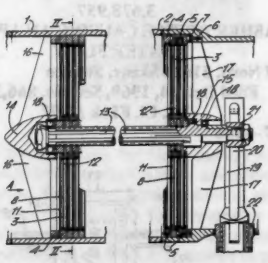
A mixing valve with a single operating handle enabling independent control of the discharge volume, the mixing ratio and the discharge direction of two miscible liquids. The mixing valve comprises a first valve member mounted in a valve housing for rotary movement relative to an adjacent fixed valve disc provided with two eccentric feeding passages for the miscible liquids, said first valve member having a transverse bore communicating with an internal inlet passage which in turn communicates dependent on the rotary position with one or both of the feed passages, a second valve member movable within said transverse bore between positions connecting said inlet passage to any one or none of two discharge lines, and an operating handle adapted to independently adjust the positions of both valve members.

3,678,962
UNIVERSAL FOUR BARREL CARBURETOR ADAPTER
Boyd J. Pierce, Jr., 2506 S. Main St., High Point, N.C.
Filed Feb. 22, 1971, Ser. No. 117,407
Int. Cl. F15d *1/02*
U.S. Cl. 138—39 **11 Claims**



A thick flat plate of substantially constant thickness for disposition between the mounting flanges of a four barrel carburetor and an associated intake manifold. The plate includes a central generally square but slightly trapezoidal opening formed therethrough and the opening is beveled toward one side of the plate. An insert plate (a plurality of selectively usable insert plates may be provided) including beveled peripheral edges is receivable within the opening formed in the first mentioned or body plate with corresponding sides of the plates coplanar. The insert plate has four apertures formed therethrough and the apertures through the insert plate may either be cylindrical or tapered, as desired. Furthermore, the corner portions of the adapter or body plate are provided with first and second sets of counterformed bores for adapting the body plate for securing various four barrel carburetors to various intake manifolds.

3,678,963
LIQUID FLOW CONTROL DEVICES
Colin Betts, Altrincham, and Alfred Edward Collinson, Warrington, both of England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Oct. 20, 1970, Ser. No. 82,416
Claims priority, application Great Britain, Oct. 22, 1969, 51,873/69
Int. Cl. F15d *1/02*
U.S. Cl. 138—41 **3 Claims**



An adjustable, cavitation suppressing, flow impedance for use in liquid flow systems comprising a series of thin barriers spaced in the direction of flow, each barrier having an abundance of penetrations and being associated with means for altering the effective area each barrier presents to the liquid flow.

3,678,964

ADJUSTABLE GUIDE CONNECTOR FOR BOWDEN CABLE

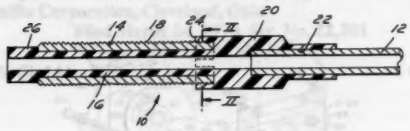
David Andrews, Welling, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 1, 1970, Ser. No. 77,154

Claims priority, application Great Britain, Feb. 6, 1970, 5,896/70

Int. Cl. F16c *1/10*

U.S. Cl. 138—103 1 Claim



An adjustable connector for connection to the guide conduit of a Bowden cable is described. The adjustable connector comprises a tube and a liner mounted within the tube. The liner extends beyond one end of the tube to form a thickened portion having an opening into which the cable guide conduit is inserted and bonded to the liner. Means are described for preventing axial and rotational movement of the tube relative to the liner. In use, the core of the Bowden cable passes through the tube and liner assembly.

3,678,965

PNEUMATIC CLEANING APPARATUS FOR TEXTILE MACHINERY

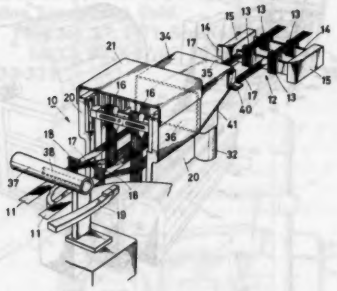
Yasuo Yamada, 4024 Mikkaichi, Kurobe-shi, Toyama-ken, Japan

Filed Dec. 18, 1970, Ser. No. 99,357

Claims priority, application Japan, Dec. 24, 1969, 44/123273

Int. Cl. D03j *1/00*; D03d *49/00*

U.S. Cl. 139—1 C 4 Claims



A pneumatic cleaning apparatus for textile machinery is disclosed for removing fly and fiber dust from operative components and parts of the machines. There are provided a plurality of suction openings communicating with a suction device for taking up and conducting away with suction air currents the lint and fly emanating particularly from local areas of a warp stop motion, harnesses and reeds, thereby improving the quality of the woven product.

3,678,966

REED TOOTH ARRANGEMENT ON A WAVE-TYPE LOOM

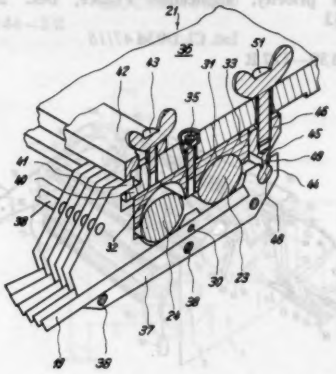
Edgar H. Strauss, Ruti, Zurich, Switzerland, assignor to Ruti Machinery Works, Ltd., Ruti/ZH, Switzerland

Filed March 26, 1970, Ser. No. 22,851

Claims priority, application Switzerland, April 11, 1969, 5518/69

Int. Cl. D03d *47/26*

U.S. Cl. 139—12 7 Claims



A reed tooth arrangement for use on a wave-type loom, which comprises a plurality of sheet-like guide elements for preventing lateral bending of the reed teeth located therebetween; carrier means for supporting said guide elements, each of said elements having a first retaining portion for mounting on the carrier, said retaining portions registering with each other in the longitudinal direction of the arrangement, and each of the guide elements also having a second retaining portion, said second retaining portion defining an opening that narrows towards the outside and said openings registering with each other in the longitudinal direction of the arrangement; and support means secured to said carrier, said support means having a rod-shaped portion that is pushed through said openings transversely of the guide elements and that is swingably mounted within the openings.

3,678,967

SHEDDING MOTION FOR A WEAVING MACHINE

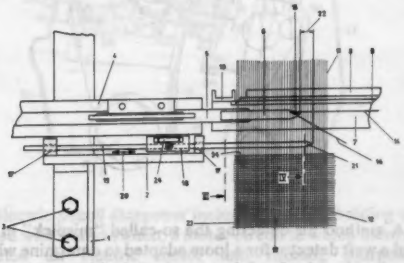
Othmar Bruhwiler, and Anton Egloff, both of Brugg, Switzerland, assignors to Georg Fischer AG Brugg, Brugg, Switzerland

Filed Sept. 11, 1970, Ser. No. 71,578

Claims priority, application Switzerland, Dec. 4, 1969, 18047/69

Int. Cl. D03c *13/00*

U.S. Cl. 139—35 3 Claims



The present invention refers to a shedding motion in a weaving machine with filling insertion from a filling yarn

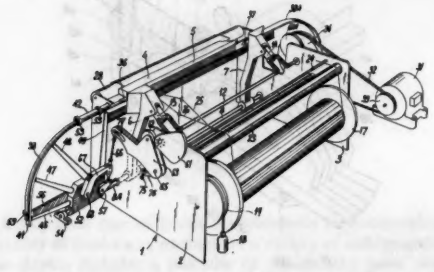
supply package outside of the warp shed, whereby the end of each pick is pulled out over at least some of the width of the shed and beyond the cloth selvage by a withdrawing carrier.

3,678,968

SHUTTLELESS LOOM

Yves Juillard, Mulhouse, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse, France

Filed Dec. 18, 1969, Ser. No. 886,298
Claims priority, application France, Dec. 24, 1968, 68180332
Int. Cl. D03d 47/18
U.S. Cl. 139—127 R 2 Claims



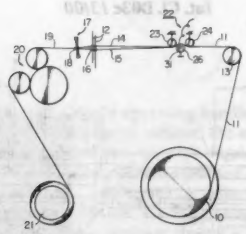
In a shuttleless loom having a reed-carrying frame pivotable about an axis, two opposed needles, one for inserting a weft thread halfway into the shed and the other for picking up the weft thread and drawing it through the second half of the shed; each needle is connected to one end of a flexible ribbon slidable in an arcuate guide which is integral with and substantially in the plane of the reed-carrying frame, and the center of the guide is adjacent the pivot axis of the frame. The other end of the ribbon is connected to a control arm on a shaft which remains perpendicular to the plane of the guide and passes through the center of the latter, and the shaft is oscillated in synchronism with the frame through a rotary shaft of the loom.

3,678,969

METHOD AND APPARATUS FOR DETECTING MISPICK IN LOOM

Miyuki Gotoh, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 15, 1970, Ser. No. 98,428
Int. Cl. D03d 51/18, 51/34
U.S. Cl. 139—370 8 Claims



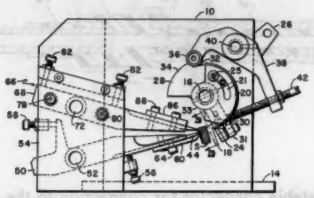
A method for detecting the so-called "mispick" in a loom and a weft detector for a loom adapted to determine whether a required length of weft is properly picked into a warp shed, by detecting a temporary rise in the warp tension caused by the weft upon beating. The weft detector comprises a warp tension sensor for detecting the temporary rise during beating and a control circuit connected to the warp tension sensor for stopping the operation of the loom upon detection of the mispick, that is, in the absence of the temporary raise in the warp tension.

3,678,970

LOOPING AND HOOKING MACHINE

Milton H. Dammel, 832 Denier Place, Cincinnati, Ohio

Filed Jan. 11, 1971, Ser. No. 105,171
Int. Cl. B21f 35/02
U.S. Cl. 140—103 10 Claims



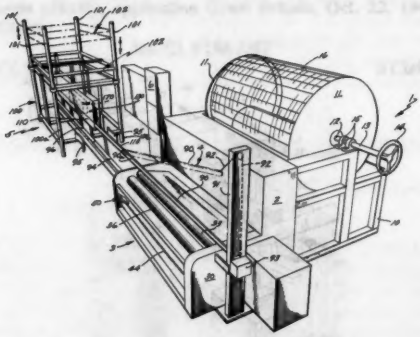
A spring looping and hooking machine is provided with a bayonet on a rotatable shaft mounted between independently adjustable bending sheaths rotatable to provide the bayonet with a circular motion. The rotatable shaft also carries a cam which serves to drive a spring clamping bar for fixing the spring on a knife edge during the hook or loop forming operation. The forming of the hook or loop is accomplished by the bayonet and sheaths bending over a pair of jaws. Each of the supports for the knife edge and the jaws are rotatably and linearly adjustable.

3,678,971

APPARATUS AND METHOD FOR CAGE ROLLING AND WELDING

Alfred A. Nordgren, Holland, Mich., assignor to W.E. Dunn Mfg. Co., Holland, Mich.

Filed July 15, 1970, Ser. No. 55,071
Int. Cl. B21f 15/08, 33/00
U.S. Cl. 140—107 56 Claims



A storage crib is provided for a roll of wire fabric which is fed beneath a shear, to a cage forming assembly which forms the fabric into a concrete pipe reinforcing cage in such a manner that it encircles a boom extending over the forming rollers. When a cage is formed, the boom can be elevated, thus extracting the formed cage from the forming apparatus. The cage is then conveyed down the boom to a welding conveyor by which it is conveyed on a beam past a welding apparatus. The welding apparatus engages and holds a pair of juxtaposed

circumferential wires and then travels with the cage as the wires are welded together. Upon completion of the weld, the wires are disengaged and the welding apparatus travels in the opposite direction towards the next pair of juxtaposed circumferential wires. The beam is supported by a plurality of supports which can be disengaged from the beam such that the cage can travel past each support as it travels towards the egress end of the welding apparatus.

3,678,972

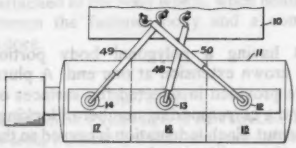
FLUID TRANSFER DEVICE

Henry A. Swindler, Palo Alto, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed March 24, 1970, Ser. No. 22,201

Int. Cl. B67d *5/00*

U.S. Cl. 141—387 **6 Claims**



A device for transferring two or more different liquids from a bulk supply to a tank truck having a compartment for each liquid. The device includes two or more loading booms, each pivoted at one end for both horizontal and vertical swinging motion. Each boom carries a delivery conduit and a dispensing head for a given liquid. The booms are pivoted at different vertical heights so that one may swing horizontally over the other as necessary for registering any dispensing head with the filler opening for any compartment in the truck. The booms and delivery conduits carried thereby are in telescopic sections so as to be extendible and power operation is provided for extension, horizontal swinging and vertical swinging of each boom. Means is also provided for recovering vapor displaced from the tank truck. The dispensing head is spring loaded into tight sealing engagement with the tank filler opening.

3,678,973

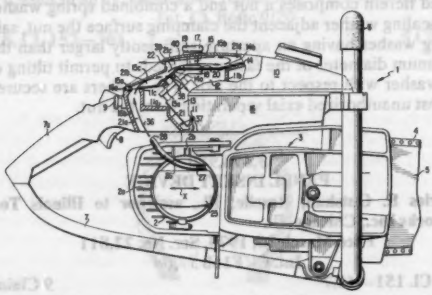
METHOD AND APPARATUS FOR HEATING CARBURETOR AIR AND FLUSHING AN AIR FILTER IN A CHAIN SAW

Wendell Harold Loop, Prineville, Oreg., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Jan. 27, 1971, Ser. No. 110,043

Int. Cl. B27b *17/02*; F02m *31/04*

U.S. Cl. 143—32 R **14 Claims**



A method and apparatus for preheating air passing to the carburetor of a chain saw engine and concurrently flushing a carburetor air filter.

A method and apparatus for utilizing a stream of exhaust gas, generated by a chain saw engine, by directing said stream, as a free flow, through air toward a preselected location on a chain saw.

3,678,974

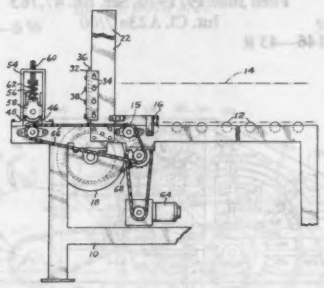
VENEER TENDERIZING APPARATUS

John C. O'Brien, deceased, late of Vancouver, Wash. (by Violet D. O'Brien, executrix), assignor to Jack-O-Line Corporation

Filed May 6, 1970, Ser. No. 35,194

Int. Cl. B27d *5/00*

U.S. Cl. 144—2 R **10 Claims**



Wood veneer tenderizing apparatus incises wood veneers across the grain to render them flexible and limp for subsequent application in the manufacture of plywood. The apparatus includes an incising assembly comprising an incising roll and a drive roll rotatably mounted in axially aligned cooperating relation. Metering feed means feed the wood veneers to the incising assembly one at a time from the bottom of a stack of wood veneers. As they pass through the assembly, the veneers are incised with a plurality of surface incisions in a pattern determined by the pattern of incising elements on the incising roll.

3,678,975

ELECTRIC PENCIL SHARPENER

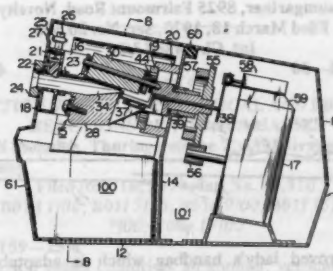
Masakazu Imanishi; Kenzi Kondou, and Ituo Sugiura, all of Nagoya, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed March 2, 1970, Ser. No. 15,797

Claims priority, application Japan, March 6, 1969, 44/2044

Int. Cl. B43l *23/02*

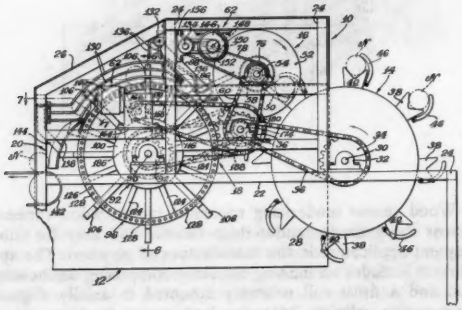
U.S. Cl. 144—28.5 **12 Claims**



An electric pencil sharpener including a pencil holding unit provided with a start switch, a motor circuit to which there are connected an electric motor and rotating sharpening mechanism operated by said motor, detecting means for detecting the sharpened condition of a pencil, switching means actuated by said detecting means whereby, upon completion

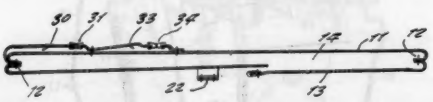
of the sharpening of the pencil to a desired first degree, a lamp is illuminated, and upon completion of sharpening to a second sharper degree, the switching means is operated to open the circuit of the motor to stop it with the lamp remaining illuminated, thereby indicating the end of the sharpening so as to prevent the pencil from being excessively sharpened. A flywheel is coupled to the rotating sharpening mechanism to prevent immediate ceasing of rotation thereof upon opening of the motor circuit.

3,678,976
ONION PEELING APPARATUS
Gerald J. Orlowski, Calumet Park, Ill., assignor to Korlow Corporation
Filed June 19, 1970, Ser. No. 47,763
Int. Cl. A23n 7/00
U.S. Cl. 146—43 R **17 Claims**



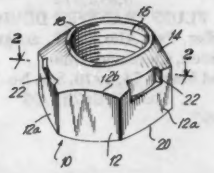
An apparatus for peeling onions. A rotating inlet conveyor is provided for introducing whole onions with their skin, and flower and root portions thereon to cutters which remove the flower and root portions end from each onion. Means then transfer the onion to a rotary member which simultaneously conveys the onions to a discharge point and peels them. During the transfer from the inlet conveyor to the conveying-peeling means, the outer peripheries of the onions are scribed to a limited depth of penetration. When the onion is transferred to the conveying means, pressurized air is directed against the scribed outer periphery of the onion to force the skin from the outer surface of the onion. The severed and peeled onion is finally transferred to a discharge station for further processing.

3,678,977
OVER ARM CARRYING BAG
Emma F. Baumgartner, 8925 Fairmount Road, Novelty, Ohio
Filed March 18, 1970, Ser. No. 20,535
Int. Cl. A45c 13/26
U.S. Cl. 150—30 **4 Claims**



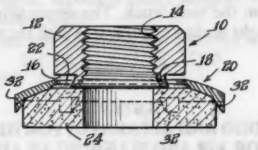
An improved lady's handbag which is adaptable as a shopping bag and a carrier for other personal objects, the device comprising a bag assembly having several different pockets each of which is adaptable for different uses, and the assembly being made of fabric material so that it may be draped over a lady's forearm with a handle on the underside thereof so that the lady may grasp the same and retain it securely against theft or loss.

3,678,978
LOCKNUT
James R. Davis, Bloomfield Hills, and Arthur B. Blum, Utica, both of Mich., assignors to Standard Pressed Steel Co., Jenkintown, Pa.
Continuation of Ser. No. 765,876, Oct. 8, 1968. This application March 10, 1970, Ser. No. 17,045
Int. Cl. F16b 39/12
U.S. Cl. 151—21 **10 Claims**



A locknut having a polygonal body portion with a frustoconical crown extension at one end. A plurality of indentations are provided in selected flat surfaces of the body portion to form a corresponding number of locking regions in the bore of the nut. Each indentation is curved so that the ends of the indentation are deeper than the crest. As a result, the locking regions also are curved but flatter than the initial curvature of the bore, whereby added contact is provided between the locking regions and a mating male member.

3,678,979
SEALING WASHER
Lowell L. Bjorklumd, Elgin, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Dec. 17, 1969, Ser. No. 885,902
Int. Cl. F16b 39/26
U.S. Cl. 151—37 **1 Claim**

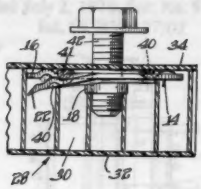


The present invention relates generally to fastener units consisting of a rotary threaded fastener such as a nut, and a combined spring washer and sealing washer adjacent the clamping surface of the nut, said combined washers being tiltable with respect to the fastener axis. The fastener unit disclosed herein comprises a nut and a combined spring washer and sealing washer adjacent the clamping surface the nut, said spring washer having an aperture sufficiently larger than the maximum diameter of the fastener threads to permit tilting of the washer with respect to the axis. The washers are secured against unauthorized axial separation from the nut.

3,678,980
PANEL INSERT DEVICE
Charles E. Gutshall, Roselle, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed March 26, 1970, Ser. No. 22,811
Int. Cl. F16b 37/04
U.S. Cl. 151—41.7 **9 Claims**

The present invention relates generally to insert devices for panels and more particularly to insert devices for installation in light weight panels such as panels composed of a honeycomb core bounded by skin sheets. The embodiments of the present invention disclosed in the drawings include a sheet

metal fastener member having an annular body which is partially severed transversely. A portion of the body adjacent one side of the body severance is deflected axially to provide an entering helical lead and panel rupturing edge. The annular



body has an internally threaded extrusion, and a thermoplastic adhesive is attached to the body which, when heated, will form a band between the fastener body and a complementary honeycomb core.

3,678,981

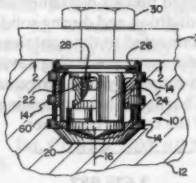
FASTENER INSERT HAVING A REPLACEABLE NUT

Ernest Heyworth, Fullerton, Calif., assignor to Tridair Industries, Redondo Beach, Calif.

Filed Oct. 5, 1970, Ser. No. 78,066

Int. Cl. F16b *39/02*

U.S. Cl. 151—41.76 **1 Claim**



A fastener insert for a carrier part where the insert provides a "floating" characteristic for an easily replaceable internal nut so that the nut is self-adjusting; for example, to compensate for the misalignment of parts.

3,678,982

PNEUMATIC RADIAL TIRE

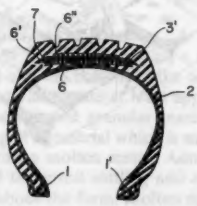
Shigeo Watanabe; Toshiyuki Sogi, and Tsuneo Mukai, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Aug. 22, 1969, Ser. No. 852,377

Claims priority, application Japan, Aug. 27, 1968, 43/60865

Int. Cl. B60c *9/20*

U.S. Cl. 152—361 **5 Claims**



A pneumatic radial tire for use in large vehicles having a carcass ply consisting of layers of rubber coated cords extending in radial directions of the tire between beads on both sides, and a reinforcing breaker in a crown encircling the carcass ply in circumferential directions. At least one organic, natural or synthetic cord layer wider than adjacent metal cord layers is arranged between the metal cord layers forming a breaker.

3,678,983

THIN FILM APPARATUS

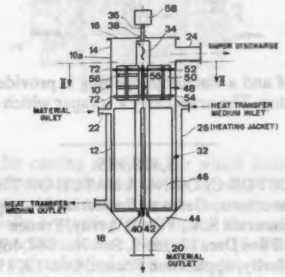
Fritz Widmer, Fallanden, and Janos Miklos Gorbei, Zurich, both of Switzerland, assignors to Luwa AG, Zurich, Switzerland

Filed June 8, 1970, Ser. No. 44,197

Claims priority, application Switzerland, June 11, 1969, 8888/69

Int. Cl. B01d *1/22*

U.S. Cl. 159—6 W **9 Claims**



A thin film apparatus of the type embodying an approximately vertical treatment compartment or chamber and with which merges at the upper end thereof a separation compartment possessing a rotor equipped with vanes or blades as well as two ring members which are spaced in axial direction from one another. The ring members surround the cross section of the separation compartment which is swept over by the rotor. Radially extending droplet collecting ridges, grooves or the like are provided at the aforementioned rotor blades or vanes, these droplet collecting ridges opening between both of the ring members. According to important aspects of the invention, the ring members are rigidly connected for rotation with the vane rotor and possess an internal diameter which essentially corresponds to the diameter of the rotor, and furthermore, the ring members partially bound the liquid-throughpassage means disposed externally of the rotor.

3,678,984

REACTION VESSEL FOR CHEMICAL AND PHYSICAL REACTIONS OF VISCOUS MASSES

Paul Rolf Stehning, Thuringerstrabe 2, 6391 Gravenwiesbach, Germany

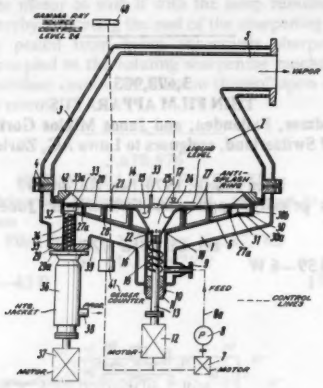
Filed Nov. 16, 1970, Ser. No. 89,810

Int. Cl. B01d *1/00*; B01f *7/16*; B01d *9/00*; B01f *15/00*; C10b *7/00*; C08g *17/00*

U.S. Cl. 159—25 A **13 Claims**

A reaction vessel comprises an annular, vertical container with a frusto-conical base through which mass to be treated is passed radially outwards a rotatable stirring mechanism. The stirring mechanism is composed of a vertical shaft with radial arms from which stirring blades depend into close proximity with the base of the container. The stirring blades are spaced along the arms, and annular dividing walls attached to the base extend into the spaces between the arms, the dividing walls

having openings at the bottom thereof for outward flow of mass. The container has an outer ring with an overflow wall in



front thereof and a discharge opening is provided in the bottom of the ring. The arms carry a scraper which travels in the ring.

3,678,985

DEVICE FOR CLOSING A HATCH OR THE LIKE

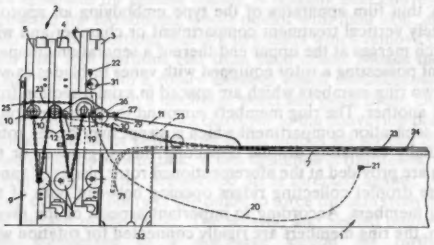
Henri Kummerman, Geneva, Switzerland, assignor to MacGregor Comarain S.A., Ville D'Avray, France

Filed Dec. 12, 1969, Ser. No. 884,469

Claims priority, application France, Dec. 13, 1968, 178124

Int. Cl. E05f *15/18*, *15/00*

U.S. Cl. 160—188 **2 Claims**



A hatch construction comprising a plurality of interconnected cover sections tiltable in an upright stowing position in a stowage space adjacent to the hatch, the endmost cover section, which is remotest from said stowage space, being automotive, stationary chain means loosely extending alongside the hatch and stowage space and secured to a fixed point at each end thereof to engage a driving pulley provided on said automotive cover section and at least on loose guiding pulley supported by the rotary shaft of said driving pulley, said chain means passing between said pulleys and embracing them at least partially.

3,678,986

METHOD FOR MANUFACTURING HOMOGENEOUS BODIES FROM SEMICONDUCTOR ALLOYS

Gerhard Oesterhelt, Nurnberg, and Eugen Szabo De Bucs, Erlangen, both of Germany, assignors to Siemens-Schuckertwerke Aktiengesellschaft, Berlin and Erlangen, Germany

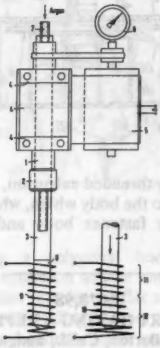
Continuation of Ser. No. 751,006, July 25, 1968, abandoned, which is a continuation of Ser. No. 504,896, Oct. 24, 1965, abandoned. This application April 27, 1970, Ser. No. 29,771

Claims priority, application Germany, June 5, 1965, 597497

Int. Cl. B22d *27/02*

U.S. Cl. 164—51 **1 Claim**

In a method of manufacturing a homogeneous, fissure-free body from a semiconductor alloy having a negative coefficient of expansion in the region of its melting point and contained in an upright tube having a closed bottom and solidified in the tube after having been in a molten condition therein, the step of rotating the tube about its axis at a speed producing cavitation in the molten alloy at least during solidification of the molten alloy therein.



In an apparatus for carrying out the foregoing method, there is provided an elongated tubular container adapted to contain the alloy in molten condition and during solidification thereof, means operatively connected to the container for rotating the latter about its axis at a speed producing cavitation in the molten alloy, and a high-frequency coil surrounding at least part of the container and having an axis coinciding at least substantially with the axis of the tubular container.

3,678,987

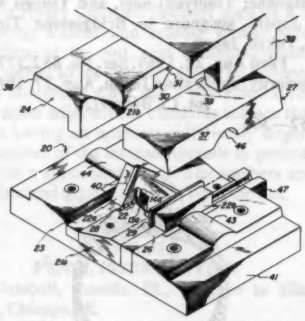
ELASTOMERIC MOLD LINING FOR MAKING WAX REPLICA OF COMPLEX PART TO BE CAST

Paul H. Kydd, Scotia, NY, assignor to General Electric Company

Filed Dec. 28, 1970, Ser. No. 101,497

Int. Cl. B22c *7/02*

U.S. Cl. 164—45 **3 Claims**

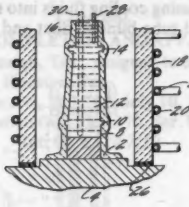


Molding of the wax replica of a complex part preparatory to casting the part from metal is accomplished with an oversize mold cavity containing an elastomeric liner element bearing (on the inside face thereof) a negative of the surface of the complex part.

3,678,988
INCORPORATION OF DISPERSOIDS IN DIRECTIONALLY SOLIDIFIED CASTINGS

John K. Tien, Rocky Hill, and Stephen M. Copley, Madison, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 2, 1970, Ser. No. 51,793
Int. Cl. B22d 27/02
U.S. Cl. 164—49 7 Claims

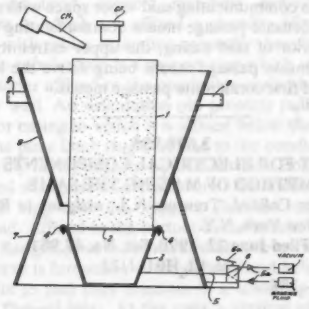


Inert particles are uniformly dispersed within a molten alloy while it is being directionally solidified in a mold to cause a uniform dispersion within the casting, the dispersion being produced by ultrasonic waves within the molten alloy during solidification.

3,678,989
APPARATUS FOR MAKING CASTINGS

Erich Krzyzanowski, Frankenthal, Upper Palatinate, Germany, assignor to Grunzweig & Hartmann Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 795,570, Jan. 31, 1969, Pat. No. 3,581,802. This application Nov. 13, 1970, Ser. No. 89,355
Claims priority, application Germany, Feb. 3, 1968, P 16 08 846.9
Int. Cl. B22c 7/00, 9/22
U.S. Cl. 164—246 7 Claims

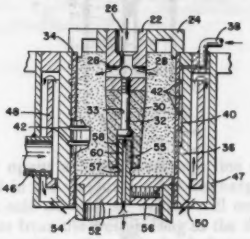


An apparatus for making castings. A body of granular material is confined in a container and a stream of gaseous fluid is introduced into the bottom of the container to impart to the granular material a state at least approaching fluidization. Into the thus agitated granular material a form is introduced consisting of a material which is subject to consumption on contact with a molten metal. Admission of gaseous fluid is terminated to permit settling and compacting of the granular material about the form. Molten metal is introduced into the form to assume the configuration of the same while simultaneously consuming the form. Gaseous fluid is then again admitted into the container to agitate the granular material for facilitating removal of the finished casting therefrom.

3,678,990
APPARATUS FOR CONTINUOUS CASTING OF HOLLOW BAR

Andrew Lawrie Fabens, Jr., Shaker Hts., Ohio, assignor to Truline Casting Company, Wickliffe, Ohio

Continuation-in-part of Ser. No. 5,694, Jan. 26, 1970, abandoned. This application Nov. 3, 1971, Ser. No. 195,649
Int. Cl. B22d 11/08
U.S. Cl. 164—274 28 Claims

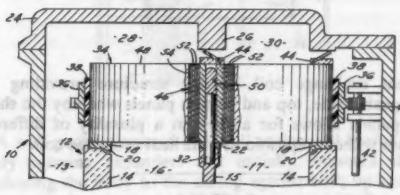


Apparatus for casting a hollow bar which includes a mold having a mandrel therein and means for distributing molten material to the mold inlet in an area between the mold and the mandrel. Initially a starting plug closes the mold outlet to prevent leakage of the molten material and provides means to join the plug and solidified melt. After the molten material freezes in the annulus around the mandrel, the starting plug is lowered at a controlled rate to draw the solidified hollow bar from the mold outlet as additional molten material is fed through the inlet. An air inlet into the hollow of the cast bar prevents the formation of a vacuum within the hollow. Further, means are provided for cooling the mold to quickly freeze the molten material as it is fed into the mold.

3,678,991
GAS TURBINE CERAMIC REGENERATOR

Joab J. Blech, Oak Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 29, 1970, Ser. No. 85,018
Int. Cl. F28d 19/04
U.S. Cl. 165—9 3 Claims



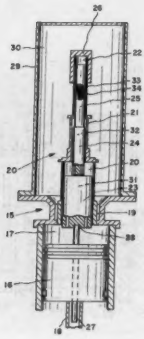
Gas conducting passages extend through the solid ceramic hub of a rotating disc type ceramic regenerator. An inorganic cement bonds the hub to the main heat transfer portion of the regenerator. The passages in the hub reduce thermal expansion differences between the hub and the main portion, reduce the rotating mass of the regenerator and increase gas flow and heat transfer. Small amounts of the material used to make the main heat transfer portion of the regenerator can fill the passages.

3,678,992

THERMAL REGENERATOR

Alexander Daniels, Briarcliff Manor, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 6, 1970, Ser. No. 61,706
Int. Cl. F28d *17/00*
U.S. Cl. 165—10 **14 Claims**



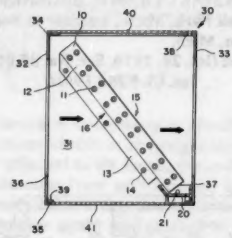
A thermal regenerator having a matrix of a plurality of hollow, carbon, micro-spheres which are permeable to and contain a gas such as helium; the matrix having low heat conductivity between the carbon spheres, but high heat capacity of the helium which increases as temperatures decrease from 40° K. to about 9° K.

3,678,993

HEAT EXCHANGE COIL AND HOUSING THEREFOR

Larry J. Pierce, Clarksville, Tenn., assignor to The Trane Company, La Crosse, Wis.

Filed Oct. 23, 1970, Ser. No. 83,495
Int. Cl. F24f *13/02*; F25b *39/02*
U.S. Cl. 165—76 **5 Claims**



A heat exchange coil housing structure providing interchangeable side, top and bottom panels whereby the shifting of panels allows for airflow in a plurality of different directions without repositioning the heat exchange coil.

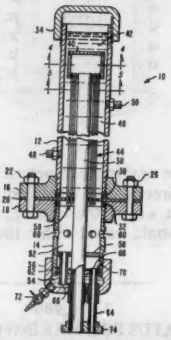
3,678,994

NOVEL CONDENSER

Yusuf M. Zhumkhawala, Los Angeles, Calif., assignor to Food Protein Concentrates, Inc., Culver City, Calif.

Filed March 9, 1970, Ser. No. 17,584
Int. Cl. F28b *9/10*
U.S. Cl. 165—111 **9 Claims**

This patent describes a novel gravity return condenser apparatus adapted for the condensation of vapors and the return of the condensate to the source of the vapors while providing for the elimination from the condenser of non-condensible vapors. More particularly, the novel condenser of this patent comprises a vertical casing having a closed upper end, an internal riser duct located within the casing and extending through the major portion of the length of said casing to form an annular space between the outer surface of the duct and the inner surface of the casing, within the upper portion of said annular space, a vertical tube bundle, above the upper end of said duct and said tube bundle a header which serves to distribute vapors rising upwardly in said duct over the upper end of said tube bundle, supporting means for said tube bundle comprising a transverse plate carried by said casing into which the tubes of said tube bundle are fixed at their lower ends, means for passing cooling fluids into said casing, around the exterior of said tube bundle, duct and header and out of



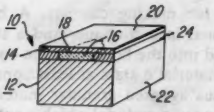
said casing, below said plate a vapor space comprising an annular space between the outer surface of said duct and the inner surface of said casing, the lower end of said tube bundle communicating with said vapor space, a second transverse plate carried by said casing forming the lower extremity of said vapor space, means associated with said vapor space for permitting the passage of uncondensed vapor to the exterior of said casing, below said second plate a condensate trap comprising an annular space between the outer surface of said duct and the inner surface of said casing, a first condensate passage means communicating said vapor space with said trap, a second condensate passage means communicating said trap with the exterior of said casing, the upper extremity of said second condensate passage means being above the lower extremity of said first condensate passage means.

3,678,995

SUPPORT FOR ELECTRICAL COMPONENTS AND METHOD OF MAKING THE SAME

Jacques Roger Collard, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 22, 1970, Ser. No. 47,981
Int. Cl. H01l *1/12*
U.S. Cl. 165—185 **4 Claims**



A heat conducting support on which an electrical component can be mounted so as to conduct heat generated by the component away from the component. The support includes a substrate of good heat conducting material and a diamond body embedded in the substrate with a surface of the diamond body being flush with a surface of the substrate. A metal film extends over the surface of the substrate and the diamond

body and is strongly adhered to the substrate. An electrical component can be mounted on and secured to the metal film over the diamond body. The support is formed by placing the diamond body on the surface of a plate of the material of the substrate and coating the surface of the plate around the diamond body with additional material of the substrate. The coating contacts the peripheral edge of the diamond body to secure the diamond body to the substrate and extends to the surface of the diamond body. A metal film can then be deposited on the surface of the diamond body and the coating.

3,678,996

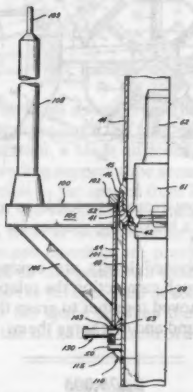
WELL COMPLETION AND APPARATUS

David P. Herd, Houston, Tex., assignor to Rockwell Manufacturing Company, Houston, Tex.

Continuation of Ser. No. 743,782, July 10, 1968, abandoned. This application Oct. 12, 1970, Ser. No. 80,192

Int. Cl. E21b *7/12*

U.S. Cl. 166—.5 **16 Claims**



A guide base and method of installing the same for underwater wells. The guide base comprises a tubular guide hub having structural support members radially projecting therefrom to which are affixed a plurality of vertical guide columns with cables extending upwardly therefrom. Near the top of the tubular hub is a support ring which seats on a support shoulder affixed to the conductor casing head of an underwater well. An orientation pin projects radially from the conductor casing to which it is affixed below the casing head. Above the pin a latch ring is affixed to the conductor having a downwardly facing slightly tapered surface. Longitudinal ribs are affixed at regular intervals around the conductor between the latch ring and the support shoulder affixed to the casinghead. Affixed to the bottom of the tubular guide hub by a bolted flanged joint is an orientation sleeve. The lower end of the sleeve is formed by cutting a left-hand helix and a right-hand helix so that they intersect in a lower tip and an apex near the flanged joint. At the apex a vertical pin slot is provided. A hold down latch assembly is provided on the tubular guide hub which has a latch member laterally engageable with the conductor latch ring when the orientation pin and pin slot are fully engaged. The guide base is installed after the conductor casing and its riser have been installed and after further drilling has proceeded.

3,678,997

AUTOMATIC DEWATERING OF GAS WELLS

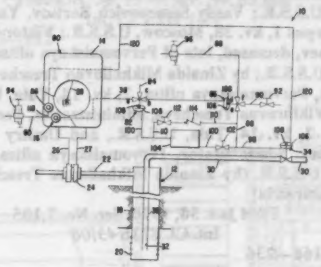
Francis M. Barchard, Edmonton, Alberta, Canada, assignor to The Singer Company, New York, N.Y.

Filed March 31, 1971, Ser. No. 129,827

Int. Cl. E21b *43/00*

U.S. Cl. 166—53 **16 Claims**

An automatic gas well dewatering system which operates to eject water from the well whenever the differential pressure across an orifice plate in the gas discharge line decreases below a predetermined low pressure value. The said dewatering system includes fluid activated control valves disposed in control loop lines to continuously cycle the control valves between open and closed positions. One of the control valves



intermittently opens a liquid discharge line connected to a tubing carried in the well casing for discharging liquid from the well. The said dewatering system will continue to cycle and eject water from the well so long as the differential pressure across the orifice plate remains below a predetermined high pressure value.

3,678,998

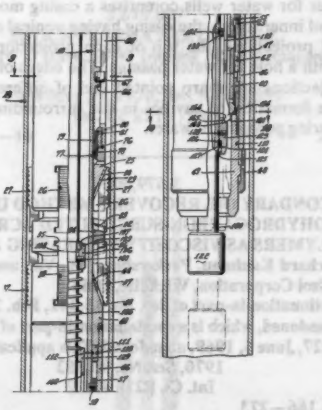
RETRIEVABLE WELL PACKER

Darryl W. Cockrell, and Rudy B. Callihan, both of Houston, Tex., assignors to Baker Oil Tools, Inc., Commerce, Calif.

Filed July 20, 1970, Ser. No. 56,626

Int. Cl. E21b *23/06, 33/129*

U.S. Cl. 166—123 **35 Claims**



A well packer lowered in a well casing and having a main body carrying expanders and initially retracted slips for anchoring the body to the casing against both up and down movement therein, the body also carrying an initially retracted packing thereon expandable against the casing, the slips and packing being expanded outwardly against the casing by moving the body upwardly, and an upper device surrounding the body downwardly against the upper portion of the expander slip and packing combination, the upward force or movement of the body being transmitted to the slip and packing combination through a coupling structure releasably connecting the body to the lower portion of combination. When the packer is to be released from the casing a retrieving tool engages and releases the coupling structure, removing the upward force of the body on the lower portion of the expander slip and packing combination, an upward pull on the tool then moving

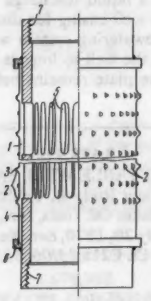
the body upwardly to effect retraction of the slips and packing from the casing.

3,678,999

FILTER FOR WATER-TAKING WELLS

Ivan Vladimirovich Kulikov, Pushkinsky proezd, 4b, kv. 17, Tula, U.S.S.R.; Vasily Semenovich Borisov, Yasny proezd, 30, korpus 1, kv. 38, Moscow, U.S.S.R.; Viktor Georgievich Treschev, deceased, late of Pervomaiskaya ulitsa, 2, kv. 14, Tula, U.S.S.R.; by Zinaida Mikhailovna Trescheva, administratrix, Pervomaiskaya ulitsa, 2, kv. 14, Tula, U.S.S.R.; by Vera Viktorovna Trescheva, administratrix, Pervomaiskaya ulista, 2, kv. 14, Tula, U.S.S.R., and Dmitry Viktorovich Treschev, administrator, Pervomaiskaya ulitsa, 2, kv. 14, Tula, U.S.S.R. (by Zinaida Mikhailovna Trescheva, acting administratrix)

Filed Jan. 30, 1970, Ser. No. 7,105
Int. Cl. E21b *43/08*
U.S. Cl. 166—236 **6 Claims**



A filter for water wells comprises a casing mounted on an apertured inner frame, the casing having conical or pyramidal external projections, the top of each projection being provided with a hole for water passage. The edges of the holes in the projections are sharp pointed and of different height to promote formation of cavities in the surrounding soil at the holes during pumping of water.

3,679,000

SECONDARY OIL RECOVERY METHOD USING N-SULFOHYDROCARBON-SUBSTITUTED ACRYLAMIDE POLYMERS AS VISCOSITY INCREASING AGENTS

Paul Richard Kaufman, Parkersburg, W. Va., assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 15,241, Feb. 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 831,227, June 6, 1969, abandoned. This application Dec. 4, 1970, Ser. No. 95,352
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **16 Claims**

Polymers of N-sulfohydrocarbon-substituted acrylamides, especially 2-acrylamido-2-methylpropanesulfonic acid, are useful for controlling the viscosity of aqueous media used in water-flooding operations for secondary petroleum recovery. The preferred polymers are homopolymers and copolymers with acrylic acid or acrylamides.

3,679,001

WELL DRILLING METHOD

Gilman A. Hill, 6200 Plateau Drive, Littleton, Colo.

Filed March 2, 1970, Ser. No. 15,850
Int. Cl. E21b *21/04, 33/138*
U.S. Cl. 166—292 **3 Claims**

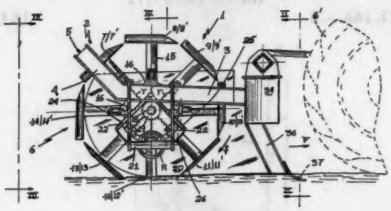
A well drilling fluid comprises a solution having dissolved therein a relatively small quantity of potassium silicate or, for some applications, sodium silicate or a mixture of sodium silicate and potassium chloride. The body of the fluid may be water or a presently available mud or other drilling fluid with which the silicate is compatible. The fluid on reaching shale sections along the well bore acts to stabilize the shale and prevent its swelling, dispersing or sloughing.

3,679,002

APPARATUS FOR PULLING ROW CROPS

Keith Douglas Bradbury, Juramento 3361, 7°, "B", Buenos Aires, Argentina

Filed Dec. 3, 1969, Ser. No. 881,937
Claims priority, application Argentina, Dec. 17, 1968, 218576
Int. Cl. A01d *25/04*
U.S. Cl. 171—56 **1 Claim**



A harvester of row-crops attachable to and powered by a tractor, comprising a harvesting-grasper for pulling row crops from the ground.

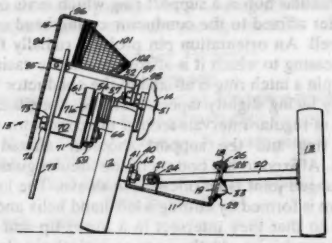
A plurality of pivoted levers are equipped each with a grasper blade. Through cam action the relating grasper blades enter the soil, are moved together to grasp the crop plants, lift them out of the ground and discharge them.

3,679,003

LAWN EDGE TRIMMING MACHINE

Donald E. Wadsworth, 88 N. W. 165th St., Miami, Fla.

Filed June 17, 1970, Ser. No. 46,956
Int. Cl. A01b *45/00*
U.S. Cl. 172—15 **11 Claims**



A lawn edge trimming machine or edger is described wherein cutter blade height is controlled by relative angular adjustment of an opposed pair of handle grip members used by the operator in propelling the machine. The cutter adjustment mechanism includes coaxial pivotal means surrounding the take-off shaft and carrying a rocker arm rotatively supporting the cutter blade for belt connection with the drive shaft, the arrangement being such that the rotative axis of the cutter blade is in the vicinity of that of the ground wheel at the same side of the machine, for simplicity and compactness of structure, for improved performance, and for enhanced maneuverability. A protective cover guard surrounding the cutter blade assembly provides maximum protection against flying objects propelled by the cutter blade, while at the same time, being comprised partly of wire mesh screening, affording a

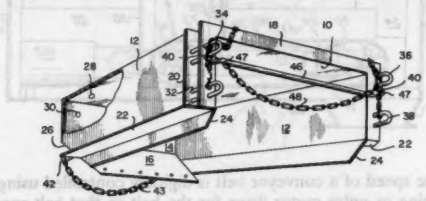
view of the rotating cutter blade to the operator during use of the machine. Foot-pedal controlled means is provided for converting the machine between vertical and oblique planes of operation of the cutter blade, for correspondingly different modes of cutter operation.

3,679,004

DRAG SCRAPER FOR DREDGING SILT

Henry Albert Loy, 87 N. 11th West, Provo, Utah

Filed July 15, 1970, Ser. No. 54,910
Int. Cl. E02f *3/60*
U.S. Cl. 172—26.5 **10 Claims**



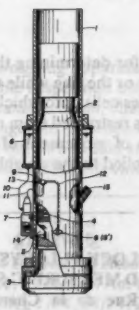
The invention includes a scraper and its combination with a catamaran. The scraper has a top wall, side and rear walls, an open front and bottom, a blade adjacent to the rear wall and an outwardly extending support shoe secured to each side wall adjacent and parallel to but spaced from its bottom edge. The top and side walls are reinforced by flanges at the front end where hooks are secured for a chain to pull the scraper forwardly. Water escape openings are provided in top and side walls. The catamaran comprises two spaced floats and lifting mechanism so that the scraper used in combination therewith can be lifted into the space between the floats and lowered into contact with the silt at the bottom of a body of water.

3,679,005

DIESEL HAMMER

Kohsaku Inaba; Seisaku Yoshida, both of Tokyo; Shoji Matsuura, and Tsukasa Murakami, both of Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Oct. 19, 1970, Ser. No. 82,041
Claims priority, application Japan, Oct. 24, 1969, 85078; Oct. 24, 1969, 44/85079; Oct. 24, 1969, 44/85080
Int. Cl. E02d *7/12*
U.S. Cl. 173—128 **5 Claims**



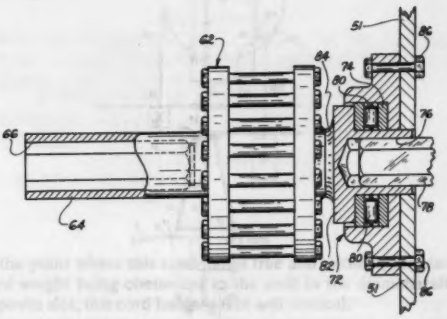
The present invention provides a diesel hammer having as major structural parts a cylinder whose upper end is opened, a ram slidably fitted into said cylinder, an anvil fitted into the lower end of said cylinder, and a fuel tank, a fuel pump and nozzles mounted upon the outer surface of said cylinder. A port is formed through said cylinder so as to deliver the air under pressure from the cylinder to said fuel pump and to deliver the fuel in said fuel tank to said nozzles.

3,679,006

POWER TRAIN FOR HORIZONTAL EARTH BORING MACHINE

Albert R. Richmond, West Salem, Ohio, assignor to The Richmond Manufacturing Company, Ashland, Ohio

Filed Oct. 30, 1970, Ser. No. 85,600
Int. Cl. E21c *1/14*
U.S. Cl. 173—152 **8 Claims**



A portable earth boring machine adapted for horizontal boring of shafts for the insertion of pipelines in installations where excavation from the surface is undesirable. The machine is characterized by a novel rugged thrust plate and boring assembly located in the power train of the apparatus between the boring auger and the frame of the machine so as to isolate the gear reduction unit from excessive axial thrust force encountered in boring operations.

3,679,007

SHOCK PLASMA EARTH DRILL

Louis Richard O'Hare, 2700 Indiana N.E., Albuquerque, N. Mex.

Filed May 25, 1970, Ser. No. 40,339
Int. Cl. E21b *7/00*
U.S. Cl. 175—16 **2 Claims**

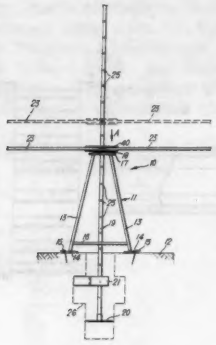
The repeated discharge of a high voltage large capacitance condenser bank across the gap of a physically strong, specially designed, water immersed electrode produces an explosive shock wave moving downward and outward to produce a hole into which the electrode and connected piping can repeatedly fall producing a deep hole in earth or rock. The conduction of current to the electrode gap is accomplished by a very high voltage - very high amperage switch operated either remotely and manually or automatically.

3,679,008

PILE BORER

Wilson Chong, 54 Norbrook Drive, Kingston, Jamaica

Filed Sept. 8, 1970, Ser. No. 70,116
Int. Cl. E21b 9/30
U.S. Cl. 175—220 5 Claims



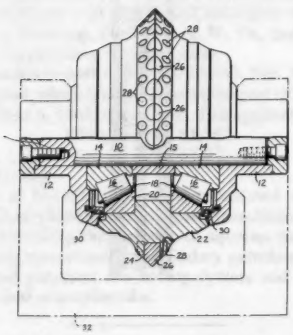
A manual pile borer includes a manually rotatable shaft the lower end of which is provided with an auger above which is a bulb-making device. The bulb-making device carries a weight and is such that as the shaft is rotated in a given angular sense the device is inoperative and closed but is rendered operative to open the device when the shaft rotates in the opposite sense, so that the bulb performs a spading action in response to manual rotation of the shaft.

3,679,009

ROTARY CUTTER FOR EXCAVATION, ESPECIALLY FOR USE WITH RAISE BORING AND TUNNEL BORING MACHINES

Robert D. Goodfellow, Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Feb. 2, 1971, Ser. No. 111,922
Int. Cl. E21b 9/22; E21c 13/01, 13/12
U.S. Cl. 175—374 9 Claims



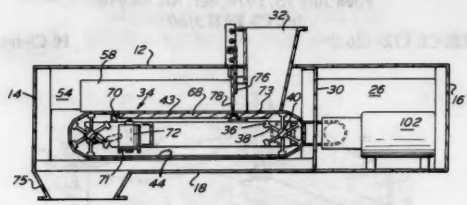
The specification discloses a rotary cutter in which a central support is mounted in a yoke or other supporting structure and which central support rotatably carries a cutting element having a central annular rib in which is mounted hard wear resistant inserts, such as cemented metal carbide inserts.

3,679,010

DIGITALLY CONTROLLED MASS FLOW FEEDER AND WEIGHT INTEGRATOR

Kenneth W. Bullivant, Glassboro, N.J., assignor to K-Tron Corporation, Glassboro, N.J.

Filed Aug. 10, 1970, Ser. No. 62,397
Int. Cl. B65g 69/00; G01g 11/04, 11/14
U.S. Cl. 177—16 14 Claims



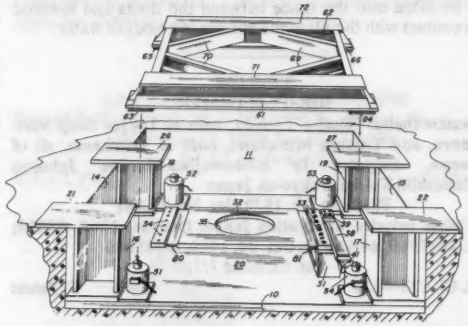
The speed of a conveyor belt is digitally controlled using a stepping or pulse motor drive for the belt so that belt speed corresponds to a preset mass flow value.

3,679,011

WEIGHING SCALE ASSEMBLY

Ira M. Hawver, 4200 Emland Drive, Topeka, Kans.

Filed Feb. 2, 1971, Ser. No. 111,920
Int. Cl. G01g 3/08, 3/14, 19/04
U.S. Cl. 177—134 10 Claims



A scale assembly for determining the weight of a load carried by a railway car or the like while the vehicle is in motion. The assembly includes cells onto which the load is applied by a weighbridge which is restrained from moving longitudinally or laterally of the path of movement of the vehicle so that the true vertical load applied to the weighbridge is imposed on the load cells.

3,679,012

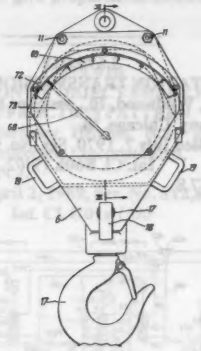
ASSEMBLY OF BLOCK PULLEYS PROVIDED WITH A LOAD MEASURING SYSTEM

Georges Haulotte, Rue de la Chambotte, (73), Barberaz, France

Filed May 13, 1971, Ser. No. 142,986
Claims priority, application France, May 14, 1970, 7017582
Int. Cl. G01g 19/14, 3/08; B66c 1/40
U.S. Cl. 177—147 7 Claims

An assembly of pulleys having a reception groove for a flexible pulley-block strap, comprising cheeks, cross-pieces connecting said cheeks, one at least of said pulleys being rotatably mounted between said cheeks on an axis fixed relative to said

cheeks, one at least of said pulleys being rotatably mounted between said cheeks and movable in its own plane under the action of the force exerted by the flexible strap on said movable pulley, an elastic system acting on said movable pulley in



opposition to said force exerted by the flexible strap on said movable pulley, and a mobile control element carried by one of said cheeks and operatively connected to said movable pulley.

3,679,013

WEIGHING APPARATUS WITH DAMPING MEANS

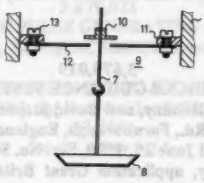
Hans Menzi, Staefa, Switzerland, assignor to Mettler Instrumente AG, Zurich, Switzerland

Filed March 30, 1971, Ser. No. 129,339

Claims priority, application Switzerland, May 12, 1970, 7014/70

Int. Cl. G01g *21/10*

U.S. Cl. 177—184 **7 Claims**



Damping means for weighing apparatus of the type including an axially reciprocable suspension member for suspending a weighing pan from a balance beam, characterized in that the damping means is arranged to produce a damping effect on the suspension member only when said suspension member is at a damping position intermediate its end limits of travel.

3,679,014

BALANCE

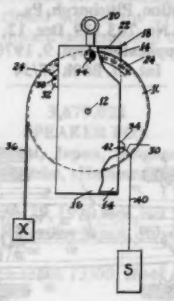
Edward H. Leonard, 184 Holden St., Holden, Mass.

Filed July 21, 1971, Ser. No. 164,714

Int. Cl. G01g *1/04, 23/24, 23/28*

U.S. Cl. 177—216 **7 Claims**

A self-adjusting balance comprising a stirrup supporting a rotatable disk at its center. The front face of the disk is graduated in degrees from 0° to 90°, the graduations continuing on the reverse face from 90° to 0°. At the rim of the disk there are two slots, at diametrically opposite 0° marks, to accommodate cords, one to be connected to a weight to be measured and the other to a standard weight, the weight to be measured being connected to the cord in the front face 0° slot with the cord lying circumferentially against a portion of the rim of the disk



to the point where this cord hangs free and vertical, the standard weight being connected to the cord in the diametrically opposite slot, this cord hanging free and vertical.

3,679,015

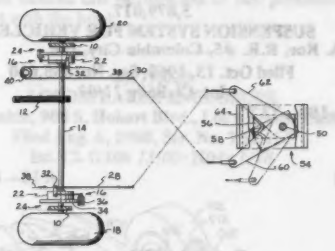
CONTROL FOR A DIFFERENTIALLY STEERED VEHICLE

Joe E. Shriver, Leganon, Ohio, assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Sept. 28, 1970, Ser. No. 76,117

Int. Cl. B62d *11/08*

U.S. Cl. 180—6.2 **5 Claims**

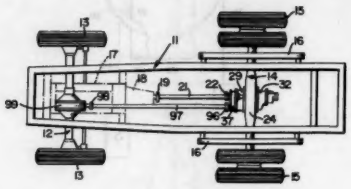


A control mechanism for disengaging the clutch and applying the brake to the wheels on one side of a differentially steered vehicle. The mechanism includes two control cables, each of the control cables being connected to the clutch and brake assembly within the drive line for the drive wheels on one side of a differentially steered vehicle. In the drive line illustrated each control cable will, when initially actuated, disengage a clutch in said drive line and, upon further actuation, apply a brake to said drive line. The actuating mechanism includes an actuator secured to a rotatable shaft, the actuator having an axially extending lug which is disposed between two arms. The arms are journalled about the shaft at one end and connected to an associated control cable at the other end. Each of the arms is normally biased against a stop by the associated control cable, each of which is spring biased away from the arm. Rotation of the actuator will cause the lug to contact one of the arms, forcing it away from the stop and in turn actuating its associated control cable.

3,679,016
VEHICLE PROVIDED WITH FOUR WHEEL DRIVE SYSTEM

Leo A. Bixby, Niles, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Division of Ser. No. 783,219, Dec. 12, 1968, Pat. No. 3,557,634. This application Sept. 9, 1970, Ser. No. 70,813
Int. Cl. B60k 17/34
U.S. Cl. 180—44 6 Claims

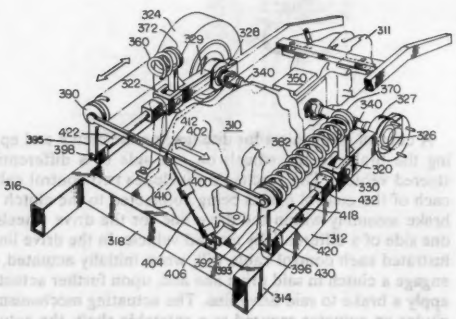


A short wheel base vehicle having a single power plant and forward and rearward drive axles incorporates a power dividing gear arrangement mounted on the rearward axle. The rearward axle housing has front and rear extensions mounting, a forward proportional differential gear set and a rearward drop gear set. The forward gear set comprises a planet carrier driven by the input shaft and mounting planet gears that are meshed with a sun gear drive connected to an output shaft for driving the forward axle. The planet gears are also meshed with a ring gear fixed on an output shaft that extends to the drop gear set which includes a pinion driving the rearward axle. The sun gear may be clutched directly to the input shaft for direct drive of both axles. The arrangement of the rearward axle housing with both front and rear extensions allows a relatively short wheelbase length for a vehicle of this type and provides for balance weight distribution with respect to the rearward axle.

3,679,017
SUSPENSION SYSTEM FOR VEHICLES

Leslie A. Roe, R.R. #5, Columbia City, Ind.

Filed Oct. 13, 1969, Ser. No. 865,610
Int. Cl. B60g 21/02
U.S. Cl. 180—73 TL 8 Claims

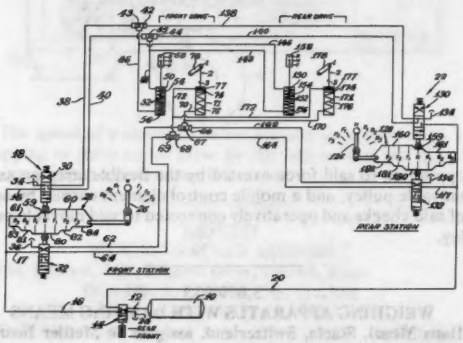


A linkage is pivotally connected to the frame of the vehicle and serves as a mounting for the vehicle wheel so that the vehicle wheel can pivot relatively to the frame in a vertical direction and the linkage is also journaled for movement on a horizontal axis causing pairs of interconnected wheels to be banked. Each wheel of the vehicle, whether power driven or steerable, can independently move vertically against a spring action for suspension of the vehicle and one or more pairs of such wheels are banked by turning movements on a respective horizontal axis. The banking of the wheel is in proportion to the steering of the vehicle. The front set or rear set, or both sets can be banked but in every event the pairs are banked in unison.

3,679,018
DUAL STATION TRANSMISSION CONTROL

Robert G. Luft, Wildwood, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed July 7, 1970, Ser. No. 52,938
Int. Cl. B60k 19/02
U.S. Cl. 180—77 S 6 Claims

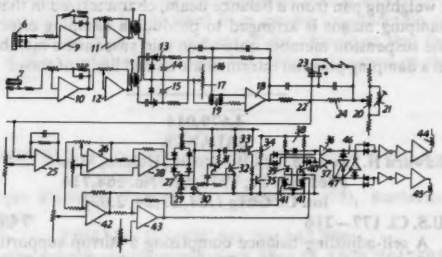


A means for controlling a pair of transmissions on a vehicle having dual power trains from either one of a pair of operator stations. A station selector valve directs air pressure to a selected valve means connected with slave cylinders for conditioning the power trains for direction of travel and speed range. The selected valve means is movable to properly direct the air pressure by a cam means selectively positionable by an operator.

3,679,019
VEHICLE GUIDANCE SYSTEMS

Stephen William Hobday, and David Stephen Hobday, both of 219 Sycamore Rd., Farnborough, England

Filed June 29, 1970, Ser. No. 50,398
Claims priority, application Great Britain, July 1, 1969, 33,286/69
Int. Cl. B62d 1/24
U.S. Cl. 180—98 5 Claims



A vehicle guidance system in which a vehicle (e.g., a tractor) follows a conductor carrying a guidance signal. Steering control is effected in response to an error signal representative of divergence of the vehicle from the required track. A pulse generator gives a variable mark/space ratio output in ac-

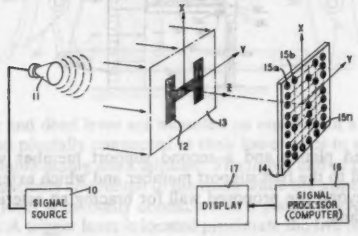
cordance with the amplitude of the error signal and the pulse generator output is directed to operate a left- or right-hand on-off fluid valve in accordance with the sign of the error signal. The fluid valves are thus controlled by the variable mark/space signal to give proportional control although they are on-off valves.

3,679,020

RECONSTRUCTION OF OBJECT SHAPE FROM SOUND DIFFRACTION PATTERN

Man M. Sondhi, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed April 2, 1969, Ser. No. 812,638
Int. Cl. G01v *1/00*
U.S. Cl. 181—0.5 R **4 Claims**



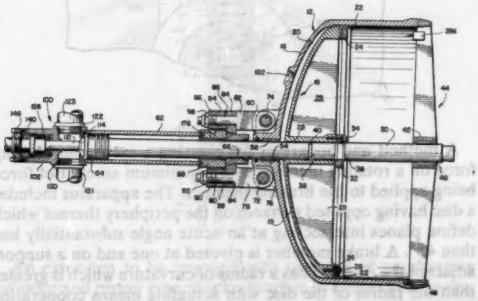
The shape of an object is reconstructed from measurements of the diffraction pattern observed in a monochromatic sound wave which irradiates the object. Both the amplitude and phase of sounds at a discrete set of points near the object (a rectangular lattice of suitable dimensions) are measured and used to evaluate the wavefront of the distorted sound wave. From these data, a visual display is constructed, e.g., on a facsimile receiver, cathode ray display, or the like.

3,679,021

ACOUSTIC PULSE GENERATING SYSTEM

Seymour Goldberg, Lexington, Mass., assignor to EG&G, Inc., Bedford, Mass.

Continuation-in-part of Ser. No. 813,625, April 4, 1969, Pat. No. 3,610,366. This application March 25, 1970, Ser. No. 22,425
Int. Cl. G01v *1/14*
U.S. Cl. 181—.5 H **20 Claims**



An acoustic pulse generator and a method of producing acoustic pulses in a fluid medium is provided. In a preferred embodiment of the invention, the acoustic pulse generator includes a piston slidably disposed within a cylindrical housing having one end open and one end closed to the fluid medium. When the generator is submerged, the piston is accelerated toward the closed end of the cylindrical housing by the ambient pressure of the fluid medium and rebounds from the closed end of the cylindrical housing to produce an acoustic pulse. Means are provided for capturing the piston after its rebound from the closed end of the cylindrical housing to prevent subsequent inward movement of the piston by the ambient pressure.

3,679,022

SPEAKER BOX

Yoshio Ohashi, Fukuroi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed June 29, 1970, Ser. No. 50,756
Claims priority, application Japan, July 4, 1969, 44/63575; July 4, 1969, 44/63576
Int. Cl. G10k *13/00*; H04r *1/28*
U.S. Cl. 181—31 B **4 Claims**

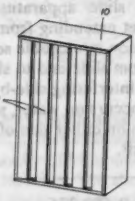
A speaker box structure comprising a casing having a front side facing the cone of a speaker contained in said casing and also having a substantially convexly curved outer surface of the rear panel joining said front side and further having a plurality of small perforations formed, in uniform scattered fashion, through said convexly curved rear panel for engagement with a hook provided on a generally substantially upright wall of a room. Thus, the position of the front side of the speaker box can be held at any desired parallel or vertically and/or laterally inclined angle relative to the wall surface by selecting the desired one perforation or two perforations for engagement with the hook.

3,679,023

LOUDSPEAKER ENCLOSURE

John C. Rankin, 908 S. Hobart Blvd., Los Angeles, Calif.

Filed Aug. 6, 1968, Ser. No. 750,615
Int. Cl. G10k *13/00*; H04r *1/28*
U.S. Cl. 181—31 A **1 Claim**



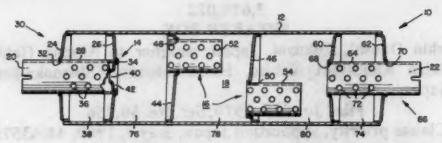
A closed back loudspeaker enclosure with the grille cloth replaced by wooden slats. The space between the slats is arranged to prevent air compression and allow free passage of sound from the loudspeaker. The loudspeaker is mounted on a front panel and both the loudspeaker and front panel are concealed by the slats.

3,679,024

MUFFLER

Kenneth C. Kirkland, Jr., and Raymon E. Hunt, both of Longview, Tex., assignors to Stemco Manufacturing Company, Inc., Longview, Tex.

Filed Sept. 11, 1970, Ser. No. 71,297
Int. Cl. F01n 1/08
U.S. Cl. 181—49 7 Claims



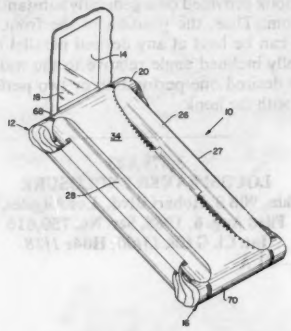
A muffler including a venturi inlet to degrade and dissipate the energy of the incoming gases and a plurality of transverse baffle plates having offset openings therethrough to cause a change in direction of the gas flow through the muffler to absorb gas flow energy with minimal increase in back pressure. Perforated tubes can be employed in the offset openings in the baffle plates.

3,679,025

INFLATABLE SLIDE AND RAFT APPARATUS

Samuel L. Rummel, East Brunswick, N.J., assignor to The Garrett Corporation, Los Angeles, Calif.

Continuation of Ser. No. 824,928, May 15, 1969. This application May 18, 1971, Ser. No. 144,646
Int. Cl. B65g 11/10; B63b 7/08; A62b 1/20
U.S. Cl. 182—20 12 Claims



An inflatable escape slide apparatus has a somewhat stretchable slideway sheet extending from end-to-end of the slide frame. A relatively non-stretchable separator strip under the sheet also extends from slide end to slide end, permitting evacuees to slide in non-interfering side-by-side escape down the sheet. If evacuation occurs on water, separately inflatable wing-like frame members on either side of the slide frame are inflated to form a large raft.

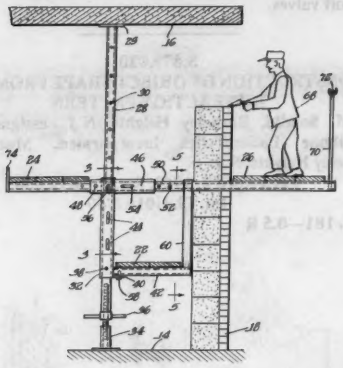
3,679,026

INTERIOR SCAFFOLDING ARRANGEMENT

Robert N. Hansen, 616 Wilson Rd., Lombard, Ill.; George T. Hempel, P.O. Box 372, Lombard, Ill., and Raymond Noesges, 3521 Louis St., Franklin Park, Ill.

Filed July 13, 1970, Ser. No. 54,410
Int. Cl. E04g 3/02, 1/04
U.S. Cl. 182—132 4 Claims

A scaffold assembly for use in the erection of exterior building walls, said assembly being mounted interiorly of a building under construction, adjacent a proposed exterior wall. Said assembly includes a plurality of laterally spaced frame members, each of which includes a first support member which is secured to the interior of the building for bracing a pair of



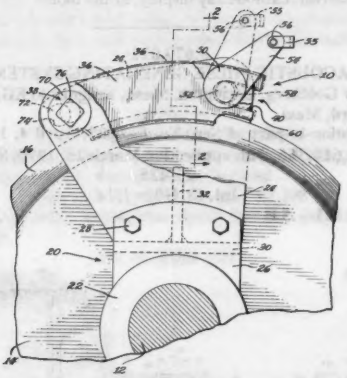
elongated planks and a second support member which is mounted to the first support member and which extends outward beyond the proposed wall for bracing an esterior elongated plank.

3,679,027

BRAKING METHOD AND APPARATUS

Birger F. Jansson, Racine, Wis., assignor to J. I. Case Company

Filed July 23, 1970, Ser. No. 57,585
Int. Cl. F16d 49/00
U.S. Cl. 188—74 9 Claims



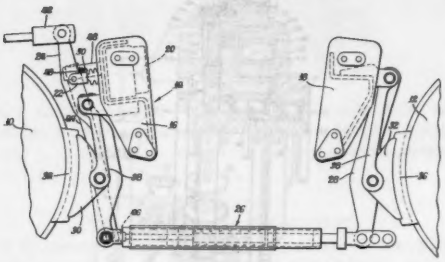
A method and apparatus for exerting a maximum braking force on a rotating member with a minimum amount of force being applied to the braking member. The apparatus includes a disc having opposed surfaces on the periphery thereof which define planes intersecting at an acute angle substantially less than 45°. A brake member is pivoted at one end on a support adjacent the disc and has a radius of curvature which is greater than the radius of the disc with actuating means cooperating with he opposite end of the elongated member to force cooperating surfaces on the member into engagement with the surfaces on the disc. During such movement, the elongated member is distorted to substantially the curvature of the periphery of the disc so that the member will return to its undistorted condition upon release of the actuating means and prevent interlocking of the member and the disc.

3,679,028

MULTIPLE UNIT BRAKE

Harry W. Mulcahy; Eldon W. Bushnell, both of Lansing, and John W. Kaim, Chicago, all of Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Dec. 10, 1970, Ser. No. 96,778
Int. Cl. F16d 65/56
U.S. Cl. 188—202 4 Claims



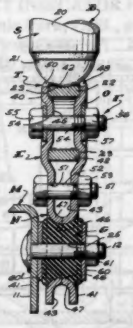
A live and dead lever are mounted on one side of a railway truck and pivotally connected at their lower ends to an automatic double-acting slack adjuster. The upper end of the dead lever is pivotally connected to the truck while the upper end of the live lever is pivotally connected to a piston engaged in a cylinder. A trigger lever is located proximate the live lever and pivotally connected at its lower end to a trigger of the slack adjuster. Two braking devices, each engageable with a wheel used to support the truck, are pivotally connected to the levers intermediate their ends. One device is connected to the dead lever and one device is connected to both the live lever and the trigger lever. Mounted proximate the upper end of the trigger lever is an abutment bracket which is used to retard movement of the end beyond a given point.

3,679,029

SHOCK ABSORBER EXTENSION

James H. Thomas, c/o Mr. Genuine Suspension, 866 W. 16th St., Newport Beach, Calif.

Filed April 21, 1971, Ser. No. 135,887
Int. Cl. F16f 9/54
U.S. Cl. 188—321 10 Claims



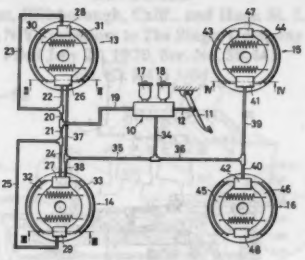
An extension to be engaged with one end of an elongate cylinder and piston type shock absorber to facilitate engaging said shock absorber with and between its normally related relatively shiftable structures upon increasing the normal spacing apart of said structures; said extension being such that it remains in axial alignment with the shock absorber, requires no modification of the shock absorber to effect its connection therewith and connects with standard shock absorber mounting means without alteration or modification thereof.

3,679,030

HYDRAULIC BRAKE SYSTEM

Tsuneo Kawabe, Hekikai-gun, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed Nov. 17, 1970, Ser. No. 90,389
Claims priority, application Japan, Nov. 20, 1969, 44/93225
Int. Cl. B60t 11/20
U.S. Cl. 188—345 6 Claims



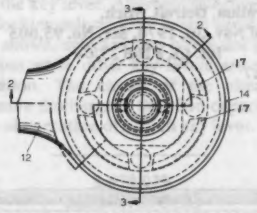
A hydraulic brake system of vehicles which comprises independent primary and secondary hydraulic circuits, two wheel cylinders attached onto each front wheel brake assembly, one of the wheel cylinders being provided with two independent hydraulic chambers therein connected with the primary and secondary fluid circuits respectively, said secondary fluid circuit being further connected with each rear wheel brake assembly, one of said hydraulic chambers which connects with the primary fluid circuit being connected with the other wheel cylinder, whereby when failure of either the primary or secondary fluid circuit occurs effective and sufficient brake force may be obtained.

3,679,031

REVERSIBLE ONE-WAY CLUTCH

Leonard W. Stephens, Fairview, Pa., assignor to Palmer Filter Equipment Company, Fairview, Pa.

Filed Oct. 5, 1970, Ser. No. 78,114
Int. Cl. F16d 41/08
U.S. Cl. 192—44 5 Claims

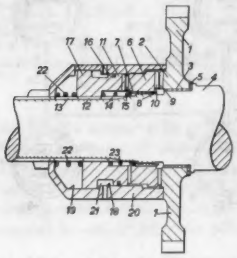


A reversible one-way clutch suitable to be used in combination with a drive and a driven member. The clutch is made up of a drum and a plurality of frictional shoes which connect the drive to the driven member. The shoes are actuated by cams. The cams move the shoes out into engagement with the drum connecting a driven member to the drive. A reversing mechanism is provided for holding the shoes away from the cam when a torsional force is exerted on the drive in a first direction relative to the driven member but allowing the shoes to move toward the cam and transmit force when a torsional force is exerted in an opposite direction between said drive and driven member. The reversing mechanism makes it possible to selectively drive the clutch either in a first direction or in a second direction.

3,679,032
LOCKABLE OVERRUN DEVICE

John S. Bennett, Cirencester, England, assignor to Massey-Ferguson Services N.V. and Abraham de Veerstrost, Curacao, Netherlands Antilles

Filed Nov. 19, 1970, Ser. No. 90,919
Claims priority, application Great Britain, Dec. 4, 1969, 59,204/69
Int. Cl. F16d *41/00, 11/00*
U.S. Cl. 192—46 11 Claims

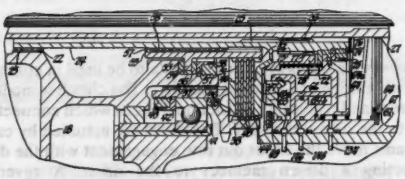


An overrun device comprises first and second drive members. The first drive member includes a plurality of ramped teeth engageable by similar teeth of a coupler mounted through helical splines to the second drive member. Engagement of these teeth in one direction causes a transmittal of the drive between the two members while driving in the opposite direction tends to separate the teeth because of the biasing effect of the helical splines. Another coupler is mounted on the second drive member for interlocking toothed engagement with the first coupler under the influence of a spring to disable the effect of the helical spline bias and retain engagement of the first set of teeth in either drive direction. Pressure fluid is utilized to disengage the second coupler and enable disengagement of the first set of teeth, effecting overrun.

3,679,033
PROPELLER COUPLING

Douglas A. Wagner, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1970, Ser. No. 93,605
Int. Cl. F16d *23/04*
U.S. Cl. 192—48.7 5 Claims

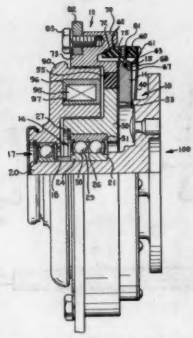


A hydraulic actuated propeller coupling for use in a helicopter type aircraft to selectively couple or uncouple a propeller to the output of a gas turbine engine normally used to drive a helicopter rotor.

3,679,034
SELF-ADJUSTING ELECTROMAGNETIC CLUTCH

Donald L. Miller, Horseheads, N.Y., assignor to The Bendix Corporation

Filed March 31, 1971, Ser. No. 129,742
Int. Cl. F16d *11/00*
U.S. Cl. 192—111 A 5 Claims

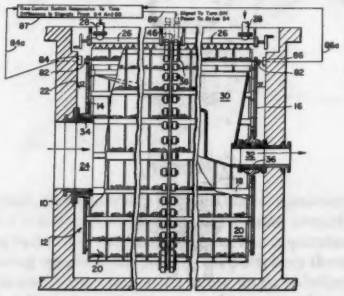


An electromagnetic clutch with wear compensating means having mating frustro-conical friction members for transmitting torque and a ferro-magnetic armature threaded to one of said friction members for clutch engagement. When the clutch is energized, the armature, which is not in the drive train, comes into contact with the pole faces of the electromagnet causing the freely mounted armature to decrease in rotational velocity. The driving friction member continues to rotate at input speed thereby advancing on its helical thread until engagement with the driven friction member. The driving friction member is driven through a flexible member which also serves as a return spring upon de-energization.

3,679,035
BEARING AND DRIVE MEANS FOR LARGE SIZE REVOLVING DRUMS

Walti Schmitt, Wiesbaden-Biebrich, Germany, assignor to Passavant-Werke, Michelbach, Hutte, Germany

Filed Sept. 2, 1970, Ser. No. 68,992
Claims priority, application Germany, March 19, 1970, P 20 13 230.3
Int. Cl. B01d *33/06;* F16h *1/06;* F16c *19/30*
U.S. Cl. 192—129 A 18 Claims



A large size drum, such as a screen drum for a screening machine or drum filter is driven by a means engaging the periphery of the drum in the same vertical plane in which the drum is supported. A plurality of rollers are mounted in a ring about the periphery of the drum and are free to run on one or more concave supporting surfaces located in position to support the drum. Drive means, such as a pinion, engage the rollers to rotate the drum.

3,679,036

KEY BOARD PRINTER

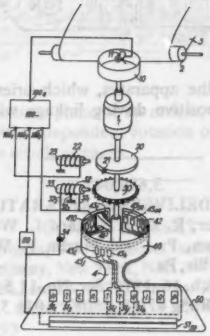
Paul F. Gloess, 114 Avenue Andre Morizot, Boulogne-Bilancourt, France

Filed Aug. 13, 1970, Ser. No. 63,527

Claims priority, application France, Aug. 14, 1969, 6927998

Int. Cl. B41j *23/04*

U.S. Cl. 197—18 3 Claims



A keyboard printer for use as a peripheral element of a computer in which the codes of the characters are key pulses exhibiting with respect to a start pulse variable discrete phase-shifts. This printer comprises means for continuously rotating a first wheel with one magnetic tooth defining a start pulse in each rotating cycle, a second wheel with a plurality of magnetic teeth defining a plurality of character pulses in each rotating cycle and a rotative arm carrying a mobile electrode. A key pulse distributor comprises a common electrode and individual character electrodes. The keys are formed by two adjacent key electrodes which exhibit a small capacitance when not touched and a large capacitance when touched by the operator's finger tips. The key pulse distributor produces key pulses during several cycles since the time during which the operator's finger tip is on the key is longer than the rotation cycle duration of the printer. Means are provided for gating only one key pulse out of a series of identical key pulses.

3,679,037

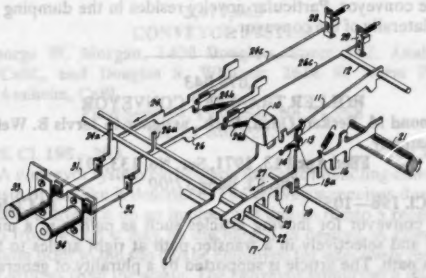
CHARACTER SELECT INDICATOR FOR TYPEWRITER

William C. Bennett, Menlo Park, Calif., assignor to Novar Corporation, Mountain View, Calif.

Filed July 17, 1970, Ser. No. 55,856

Int. Cl. B41j *5/30, 23/02*

U.S. Cl. 197—19 1 Claim



An electrical character select indicator for a typewriter where the latch interposers of a typical single printing head typewriter of the IBM Selectric type are each coupled to a differential transformer through a linkage which is coupled to the latch interposers, the differential transformer having a core which in its null position indicates the latch interposer is unactivated and when moved by the latch interposer means causes the differential transformer to provide an output voltage to indicate actuation of the latch interposer.

3,679,038

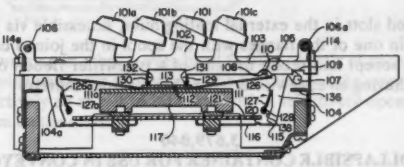
ELECTRICAL CIRCUIT FOR IMPACT CONTACT KEYBOARD

John M. Hunt, Hillsborough, Calif., and Hugh St. L. Dannatt, Rochester, N.Y., assignors to The Singer Company

Filed July 27, 1970, Ser. No. 58,441

Int. Cl. B41j *5/08*

U.S. Cl. 197—98 5 Claims



A keyboard is disclosed which produces a signal in response to the depression of a selected key lever. In response to the depression of the selected key lever, a resilient spring contact is deflected away from a relatively fixed contact and released. The resilience of the resilient spring contact causes said spring contact to return towards the relatively fixed contact and make a momentary closure therewith. In response to the momentary closure, an electrical signal is produced during the charge time of a capacitor in series with the closing contacts. The capacitor is so chosen that it will be substantially fully charged in response to the closure of the contacts and no additional signal will result in the event that there should be any contact bounce or multiple closures thereof. An actuating pawl for actuating the resilient contact spring is attached to the key lever and a single spring is used to bias the actuating pawl and the key lever to their at rest positions. A bail which may be selectively positioned in cooperative relationship with a projection on the actuating pawl may be used to lock the key levers against actuation. A frame member is employed to pivot the pawl near the end of the down stroke of the key lever and thereby release the resilient contact spring. The cited frame member, the pawl and the key lever coact to provide a down stop limit for the key lever. Alternate selective means may be provided for locking selected key levers against actuation. In the structure shown, selected key levers are pivoted from a forward position while other key levers are pivoted from a rearward position. The circuit of the cited capacitor is designed to assure discharge of the cited capacitor well within the cycle time of operation of a given key lever.

3,679,039

RIBBON SPOOL

Walter D. Landgraf, 9628 S. Kildare Ave., Oak Lawn, Ill.

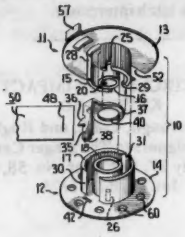
Filed July 25, 1969, Ser. No. 844,993

Int. Cl. B41j *35/00*

U.S. Cl. 197—175 7 Claims

A ribbon spool for typewriter ribbon includes a pair of molded plastic spool components each having a circular flange from which a pair of spaced, cylindrical, coaxial internal and external telescoping hubs project. An axial hole in the smallest diameter hub is aligned with central holes in each of the flanges to permit the overall spool to accept the upstanding spindle of a business machine. A ribbon retaining element in the form of a sheet metal clip is adapted for insertion on the smallest diameter hub prior to joining of the two spool components. The clip is then held captive on the spool by the hub with which the smallest diameter hub mates and by a slot in

the flange of the other spool component which accepts a tab on the metal clip. A prong on the clip is adapted to engage the typewriter ribbon. As an alternative securing means, a pair of



aligned slots in the external mating hubs, accessible via a cutout in one of the flanges with the spool in the joined condition, accept and retain the end of a typewriter ribbon of the type having an edgewise-oriented bar clamped thereto.

3,679,040

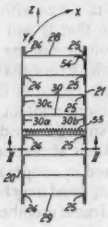
COLLAPSIBLE CONTAINER FOR USE IN CONVEYOR SYSTEMS

Heinz Kretzschmar; Rolf Chlebus, both of Wiesensteig, and Willi Ochsner, Nurtingen, all of Germany, assignors to Organisation Ralfs KG, Wiesensteig/Wuertt, Germany

Filed July 8, 1970, Ser. No. 53,251

Int. Cl. B65d 7/24; B65g

U.S. Cl. 198—1 **22 Claims**



A collapsible open-top container for use in conveyor systems wherein the containers travel in an upright channel and are entrained by one or more endless belts, chains or like conveyors travelling along the lower end of the channel. The container comprises two upright side walls connected to each other by transverse links which can form an apertured bottom and/or the front and rear end walls of the container. The side walls and the links together form a parallel motion whose components are pivotable with reference to each other about vertical axes so that one of the side walls is movable parallel to itself close to and away from the other side wall. The container is provided with one or more legs which engage the conveyor or conveyors, and with at least one bumper extending beyond the front and/or rear end wall to maintain the container at a desired minimum distance from adjacent containers.

3,679,041

APPARATUS FOR THE TRANSFER OF ARTICLES

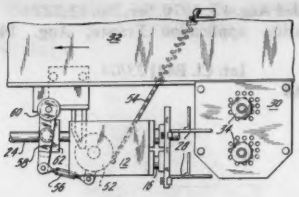
Edward F. Parkell, Horseheads, N.Y., assignor to Dart Industries, Inc., Los Angeles, Calif.

Filed Jan. 6, 1971, Ser. No. 104,357

Int. Cl. B65g 47/00

U.S. Cl. 198—24 **2 Claims**

An apparatus for moving glassware through substantially a 90° angle in transferring same from a stationary platform to a moving conveyor. Such apparatus includes an extensible and retractable means operable by a dual-mounted double-acting fluid motor arrangement that is automatically responsive to



the orientation of the apparatus, which orientation is controlled through a positive driving linkage with a glassware forming machine.

3,679,042

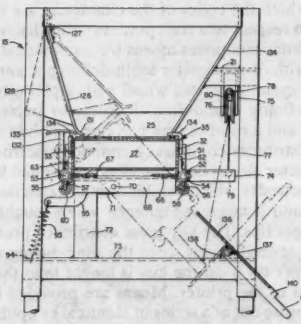
FEED DELIVERING APPARATUS

Benjamin K. Smoker, R. D. 3; Richard L. Weaver, R. D. 1, both of Myerstown, Pa., and Marlin P. Weaver, 525 E. Maple Ave., Annville, Pa.

Filed Feb. 16, 1970, Ser. No. 11,544

Int. Cl. B65g 47/18, 15/00; A01k 5/00

U.S. Cl. 198—57 **8 Claims**



A delivering apparatus is provided, of the conveyor type, preferably adapted for delivering feed to animals, wherein feed is deposited onto a moving conveyor, preferably through a hopper, and travels along an upper surface of the conveyor for a predetermined distance, until a switch is actuated, which in turn, actuates a motor, which causes the conveyor to tilt, such that the feed is dumped therefrom by gravity drop, toward a deflector plate, to be deposited at one side or other of the conveyor. Particular novelty resides in the dumping of feed laterally of the conveyor.

3,679,043

ROLLER TRANSFER CONVEYOR

Raymond M. Becker, Oden, Mich., assignor to Jervis B. Webb Company

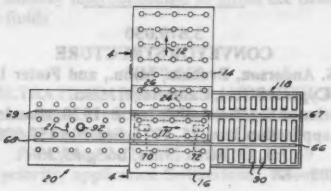
Filed April 13, 1971, Ser. No. 133,491

Int. Cl. B65g 37/00

U.S. Cl. 198—105 **14 Claims**

A conveyor for moving articles such as pallets in a main path and selectively in a transfer path at right angles to the main path. The article is supported by a plurality of generally spherical elements mounted at desired intervals along each of a plurality of parallel shafts. Each spherical element consists of a pair of spherical segments forming portions of a sphere centered on a shaft and rotatable therewith, the segments being independently rotatable on an axis normal to the shaft.

When the shafts are rotated by driving means, an article is moved by the elements in the main path. When the shafts are stopped with the axes of rotation of the spherical segments at



about 45° to the base plane of an article, it is movable in the transfer path with independent rotation of the spherical segments which the article engages.

3,679,044

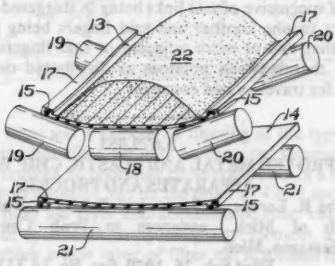
CONVEYOR BELT

Hebert E. McGinnis, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Jan. 13, 1971, Ser. No. 106,158

Int. Cl. B65g *15/30, 15/40*

U.S. Cl. 198—193 **9 Claims**



A conveyor belt for carrying bulk material while supported on troughing rolls has nearly inextensible longitudinal reinforcements in the edges only of the belt, above the margins of the transverse reinforcements. The belt is made of rubber or other elastomer of uniform thickness except at the edges which are substantially thickened on the top surface only, to contain the longitudinal reinforcements. The transverse reinforcements are preferably a spaced pair of fabrics, inextensible in the direction transverse of the belt but extensible longitudinally.

3,679,045

CONVEYOR SYSTEM

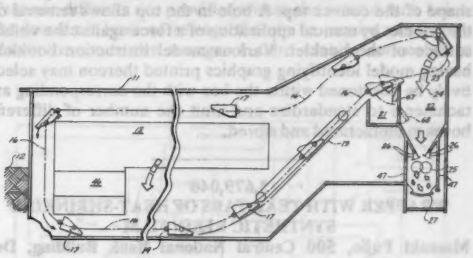
George W. Morgan, 1400 Douglass, Space 112, Anaheim, Calif., and Douglas S. Whitney, 2616 E. Norm Place, Anaheim, Calif.

Filed Sept. 14, 1970, Ser. No. 71,958

Int. Cl. B65g *23/00*

U.S. Cl. 198—203 **16 Claims**

A conveyor system particularly useful for handling domestic waste or the like is described. The conveyor receives dumped waste, conveys it up an incline, and dumps it into a receiving silo from which it may be discharged as desired. A dumping station prior to the silo can be employed for selectively removing articles from the waste. The conveyor comprises a plurality of carts mounted between rails forming a continuous loop track. The carts are interconnected by cables to form a continuous conveyor with the carts intermittently spaced along the cables. In order to drive the conveyor, a reversible chain drive is employed with a pair of pawls on separate portions of the chain so that they move in opposite directions along the extent of the track. The pawls permit passage of the carts when the pawls are moving in the reverse direction and they engage the cart when moving in a forward direction for driving



the conveyor in a hand-over-hand fashion. A pair of such sets of driving pawls are provided on the two sides of the conveyor respectively so as not to interfere with a selectively openable bottom on the carts.

3,679,046

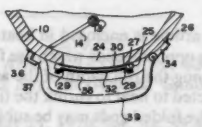
GRAIN AUGER DEVICE

George N. Loch, Box 14, Glendon, Alberta, and Alphonse Loch, R.R. 2, Tofield, Alberta, both of Canada

Filed Dec. 29, 1970, Ser. No. 102,357

Int. Cl. B07b *1/06*

U.S. Cl. 198—213 **1 Claim**



An elongated opening is formed through the casing of an auger on the underside and a screen is detachably secured over the opening to screen out small weed seeds and the like. This opening is blanked off when not in use and the degree of screening is governed by the volumetric intake of the auger which is adjustable.

3,679,047

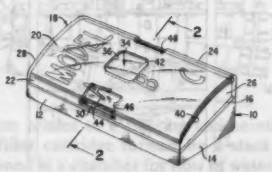
STORAGE BOX WITH INTERCHANGEABLE GRAPHICS

Andrew G. Papirnyik, Cranford, N.J., assignor to The Singer Company, New York, N.Y.

Filed Nov. 25, 1970, Ser. No. 92,720

Int. Cl. A45c *11/18*

U.S. Cl. 206—39 **2 Claims**



A box for storing attachments and an instruction booklet for a sewing machine or similar household appliance having a receptacle for storage of the attachments and a transparent plastic top cover for storing the instruction booklet with the graphics and indicia of the booklet positioned for display through the top. The top includes a convex surface and a ledge

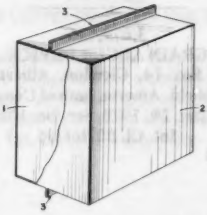
or shelf juxtaposed slightly therebelow on opposite sides thereof. The booklet is positioned within the top with its sides supported on the shelves. The spacing between each shelf and the top surface, and the surface area of the top between the shelves, is such that the booklet conforms substantially to the shape of the convex top. A hole in the top allows removal of the booklet by manual application of a force against the visible surface of the booklet. Various model instruction booklets having model identifying graphics printed thereon may selectively be positioned within the box with the corresponding attachments to standardize and limit the number of different boxes manufactured and stored.

3,679,048

WRAPPER WITH TEAR TABS OF HEAT-SHRINKING SYNTHETIC RESIN FILM

Masaaki Fujio, 500 Central National Bank Building, Des Moines, Iowa

Filed April 1, 1970, Ser. No. 24,629
Int. Cl. B65d *85/00, 33/16*
U.S. Cl. 206—46 R **2 Claims**



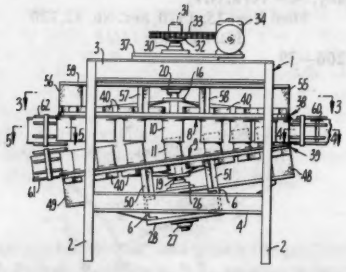
A product or article is enclosed in heat-shrinking synthetic resin film having opposite ends which are folded closed to provide tear tabs along the full width of the article. The article in the film is subjected to heat to shrink the film into contact with the article and the folded ends may be subjected to heat to seal them. The tear tabs may include three or more layers of material to give added strength.

3,679,049

ROTARY CAN SEPARATOR

George E. Kilner, Alameda, Calif., assignor to Fliper Corporation, San Ramon, Calif.

Filed May 21, 1971, Ser. No. 145,774
Int. Cl. B07c *5/36*
U.S. Cl. 209—71 **13 Claims**



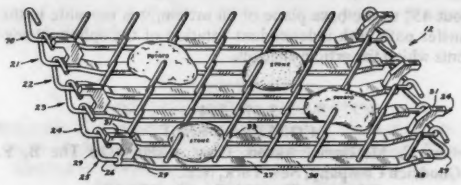
A rotary can separator for separating pairs of telescopically combined cans, each pair having a smaller can nested within a large can with the closed end of one extending across the open end of the other comprising a pair of rotatable, opposed, spaced, vertically diverging discs mounted on the same drive shaft, a motor for rotating the discs, a can feeding track which feeds the cans between the discs, a set of stationary magnets backing each disc of sufficient strength to attract and hold the closed ends of the cans against the respective discs and a pair of can withdrawing tracks which receive the separated cans and transport them from between the discs.

3,679,050

CONVEYOR STRUCTURE

William S. Anderson, Braham, Minn., and Foster L. Bucher, 222 N. Cypress Street, Cambridge, Minn.

Continuation of Ser. No. 1,384, Jan. 8, 1970, abandoned. This application June 25, 1971, Ser. No. 157,000
Int. Cl. B07b *13/04*; B65g *15/30*
U.S. Cl. 209—84 **5 Claims**



A cross-link conveyor as in connection with a potato harvester wherein each link thereof has upstanding resilient fingers spaced therealong and molded integral therewith, the fingers of successive of said links being in staggered relation with respect to one another and said fingers being spaced apart such that two or more adjacent of said fingers receive and retain therebetween potatoes as distributed onto said conveyor for travel by said conveyor

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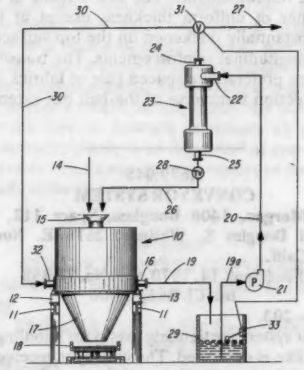
3,679,051

IMPROVED METAL AND PLASTIC CHIP WRINGING APPARATUS AND PROCESS

Charles R. Larson, Bellevue, and Robert H. Dudley, Portage, both of Mich., assignors to Prab Conveyors, Inc., Kalamazoo, Mich.

Filed Feb. 26, 1970, Ser. No. 14,313
Int. Cl. B01d *21/26*
U.S. Cl. 210—73 **6 Claims**



Cutting and cooling fluids used in machining metal and/or plastic parts are effectively removed from the resulting chips by a process comprising first separating in a centrifugal separator a liquid-slid admixture of the fluid and chips into a solids portion and a liquid portion containing entrained solid particles, thereafter introducing the liquid portion into a cyclone separator so as to concentrate the solid particles in a liquid bottoms portion, and reintroducing the solid particle-

containing liquid bottoms portion into the centrifugal separator. The liquid takeoff portion from the cyclone separator is substantially free from solid particles and can be reused. The apparatus comprises a centrifugal separator and a cyclone separator suitably interconnected to effect the desired transfers of the fluids.

3,679,052

FILTRATION APPARATUS AND METHOD

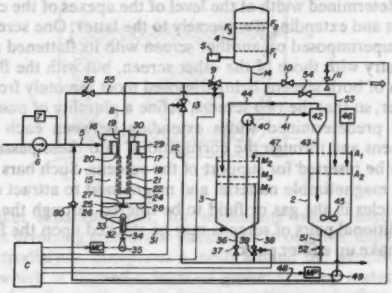
Jean-Jacques Asper, Geneva, Switzerland, assignor to Brasco S.A., Geneva, Switzerland

Filed March 27, 1970, Ser. No. 25,169

Claims priority, application Switzerland, March 27, 1969, 4692/69

Int. Cl. B01d *33/36, 37/02*

U.S. Cl. 210—75 **21 Claims**



A pressure filter and a method of filtering of the type employing a particulate filter aid may be operated substantially continuously through an operating cycle composed of a cleaning stage of short duration, say on the order of 4 or 5 seconds, in which the filter aid layer and accumulated filter cake are purged from an open-work, supporting filter element, a coating stage in which a new layer of filter aid is formed on the filter element and involving a time of about 10 seconds, and a filtering stage. A rapid coating of the element with a layer of filter aid is facilitated by using a filter aid having a mean particle size approximately equal to the size of the openings in the support. The filter aid purged from the filter chamber during each cleaning cycle is recovered by conducting the mixture of filter aid, impurities, and raw liquid from the filter, upon cleaning, to a holding tank and then recycling, over a period of time or continuously, the mixture from the holding tank through a separator. The filter aid fraction is separated and conducted into a filter aid storage tank for use during the next cycle, make-up filter aid and filtrate being added to the filter aid storage tank as required. The level in the holding tank is reduced just before each cleaning to the extent required to provide a capacity sufficient to receive the mixture purged from the filter during cleaning. Continuous filtrate output may be achieved by accumulating filtrate in a storage reservoir during the filtering stage (for delivery) during the cleaning and filter aid coating stages.

3,679,053

BATCH SEWAGE TREATMENT SYSTEM

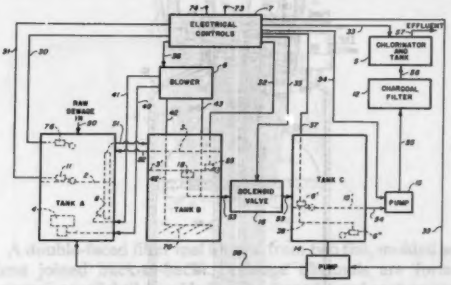
James Koulovatos, Brunswick, and Kenneth L. Thomas, Portland, both of Maine, assignors to Pollution Control Products, Inc., Portland, Maine

Filed July 27, 1970, Ser. No. 58,475

Int. Cl. B01d *21/24*

U.S. Cl. 210—86 **11 Claims**

An aerobic batch sewage treatment system to receive raw sewage mixed with water and adapted to reduce the size of the sewage while simultaneously exposing it to oxygen to initiate aerobic activity. The system includes three tanks, an air lift pump within the first tank being adapted to transfer the sewage in the form of a slurry from the first tank to a second tank which serves as a settling tank, the level of sewage in the second tank being maintained between high and low limits. Ceramic diffusers are provided within the second tank below the low limit level of sewage therein to receive air from a blower to aerate the sewage. A third tank is connected to



receive substantially pure liquid by gravity feed from the second tank and valve means is furnished within the second tank and connected to control flow of liquid between the second and third tanks; the active portions of the valve means which receive and control the liquid flow are located at all times below said low limit to prevent accumulation of oxidized sewage particles on said active portions and to keep such particles out of the connecting pipe between the tanks.

3,679,054

FILTERING AND AERATING JET BREAKER

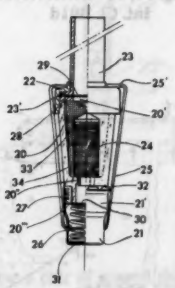
Jacques Muller, 123 Ave. du Genl. de Gaulle, La Garenne-Colombes, France

Filed May 21, 1970, Ser. No. 39,469

Claims priority, application France, May 30, 1969, 6917683

Int. Cl. C02c *1/14*

U.S. Cl. 210—95 **4 Claims**



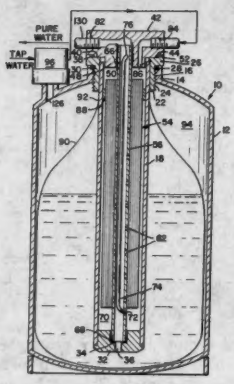
This invention relates to a filtering and aerating jet filter comprising a filter cartridge formed by a stack of grooved washers positioned in a chamber for flow of water under pressure through the stack of washers and out of the outlet of the device. The outlet has an associated port for entry of air into the filtered jet of water to aerate the latter. The chamber in which the stack is positioned is designed to contain a deodorizing substance to remove odors from the water and the device is designed so that it may readily be disassembled and also may be cleaned without disassembling by having a reverse flow of water therethrough.

3,679,055

REVERSE OSMOSIS WATER PURIFIER

Timothy M. Clark, San Carlos; Henry Shanfield, Santa Ana, and David L. Grunau, San Francisco, all of Calif., assignors to Polymetrics, Incorporated, San Carlos, Calif.

Filed July 15, 1970, Ser. No. 54,922
Int. Cl. B01d 31/00
U.S. Cl. 210—110 7 Claims



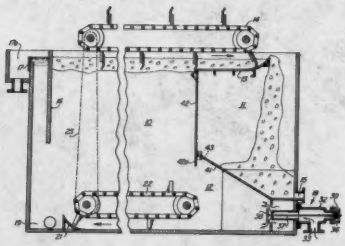
A water purifier for removing dissolved substances and solid impurities from water supplied at an elevated pressure to a reverse osmosis element located inside a pressurized storage tank. As purified water from the element is collected within the tank it further compresses air in the tank, which air is used to force the purified water from the tank when used. A valve connected in the conduit supplying water to the element is responsive to air pressure within the storage tank to cut off the water flow when the supply of purified water in the tank reaches a predetermined level.

3,679,056

FLOTATION APPARATUS

Ralph B. Haymore, Salt Lake City, Utah, assignor to Envirotech Corporation, Salt Lake City, Utah

Filed Aug. 13, 1970, Ser. No. 63,445
Int. Cl. B01d
U.S. Cl. 210—221 7 Claims



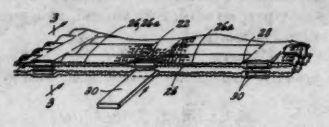
Flotation apparatus comprising an elongated tank having at one end both a submerged feed inlet and an upper froth overflow, a clarified effluent overflow at the opposite end, and a bottom outlet for removing settled solids. A mixing valve assembly is associated as a feed inlet for admixing an aeration stream with the primary feed as it enters the tank; and a trap is provided adjacent the feed inlet for removing relatively large air bubbles from the feed before it enters the main flotation zone.

3,679,057

SCREEN FILTER PACK AND METHOD FOR MAKING SAME

Damasco Rodolfo Adelto Perez, 17 E. San Marino Ave., Alhambra, Calif.

Filed Sept. 11, 1970, Ser. No. 71,300
Int. Cl. B01d 35/06
U.S. Cl. 210—223 7 Claims



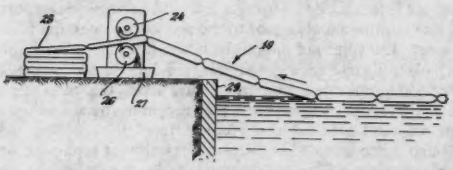
The filter is constructed of superimposed corrugated screens, each of which has a plurality of flattened areas of a predetermined width at the level of the apexes of the corrugations and extending transversely to the latter. One screen may be superimposed on another screen with its flattened areas in registry with those of the other screen, but with the flattened area of both screens being disposed most remotely from each other, so that the two screens define a plurality of passages of said predetermined width extending between each pair of screens and through the corrugations. Into these passage bars may be inserted for support of the screens. Such bars may be of a magnetizable material and magnetized to attract metallic particles in the gas or fluid to be filtered through the screen. Additional pairs of screens may be stacked upon the first pair to make up a filter pack.

3,679,058

OIL COLLECTION BOOM

Millard F. Smith, P.O. Box 295, Saugatuck, Conn.

Continuation-in-part of Ser. No. 739,231, June 24, 1968, Pat. No. 3,539,013. This application Jan. 27, 1970, Ser. No. 6,117The portion of the term of this patent subsequent to Nov. 10, 1987, has been disclaimed.
Int. Cl. C02b 9/02
U.S. Cl. 210—242 6 Claims



An oil absorbing boom to be deployed across the effluent stream from a separator or settling basin on the downstream side of oil transfer operations at a seaport for the purposes of collecting and removing from the water thin films of oil such as those which sometimes escape from oil spill booms surrounding a tanker at a loading dock, and comprising an elongated flat tubular sleeve of polymer netting enclosing within itself a plurality of flat elongated slabs or bats of "picker-lap" fibrous polymer material such as blown polypropylene film arrayed end to end within the tubular sleeve and sufficiently spaced apart to permit accordion folding of the sleeve at fold lines between adjacent bats, with a tension-bearing rope or cable being positioned within the tubular sleeve alongside the successive plurality of absorbent bats to reinforce the structure for carrying its own weight or impact loads placing it in tension between its ends. Alternatively, a continuous, wide, flat sheet of extremely porous hydrophobic foam material such as fully reticulated polyurethane foam, suspended from overlying buoyant flotation material, is formed into a similar elongated boom deployed across a floating oil film or into a

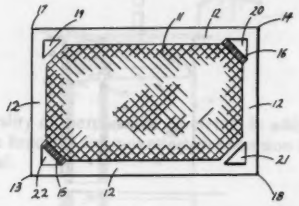
continuous endless belt repeatedly cycled through the floating oil. After trapping oil within the porosities or interstices of the boom or belt material, it is squeezed between pinch rolls to force out and recover the trapped oil, and the device is thus capable of successive repeated deployment cycles of oil recovery operation.

3,679,059

MEMBRANE PACKS

James Andrew Stewart Wyatt; Clifford Victor Gascoyne Chapman; George Stefan Solt, all of Rickmansworth, and Mullet, Sidney George, Chessington, all of England, assignors to William Boby & Company Limited, Rickmansworth, England

Filed July 28, 1969, Ser. No. 845,475
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 10 Claims



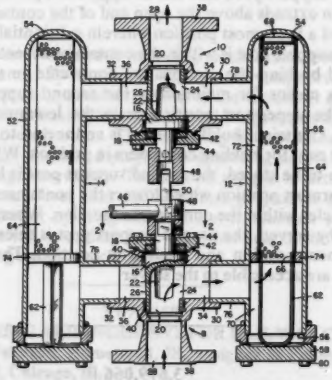
A gasket separator unit, for membrane packs, used in processes involving membrane packs used in osmosis, dialysis, and electrodialysis, comprises a mesh around the peripheral area of which is formed a layer of gasket-forming material, embedded in the mesh, which forms a continuous surface on either side of the mesh.

3,679,060

DUPLEX STRAINER CONSTRUCTION

Russell G. Smith, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio

Filed Sept. 8, 1970, Ser. No. 70,406
Int. Cl. B01d *35/12, 29/38*
U.S. Cl. 210—333 15 Claims



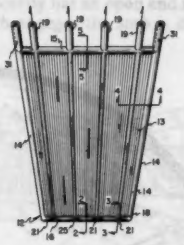
The duplex strainer structure comprises two parallel elongate strainer housings flanking rotatable valving means in a common plane, the valving means being operative to place in service alternatively either of the two fluid strainers while the other undergoes cleaning. The valving members, their operating stems, and the strainer axes are arranged in coplanar relationship, to provide a compact substantially flat assembly in which the strainer housings protectively flank the valving means.

3,679,061

MOLDED FILTER LEAF

Steven S. Davis, Bountiful, Utah, assignor to Envirotech Corporation, Salt Lake City, Utah

Filed June 15, 1970, Ser. No. 46,330
Int. Cl. B01d *33/22*
U.S. Cl. 210—486 9 Claims



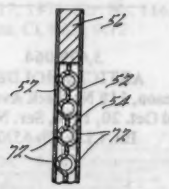
A double-faced filter leaf formed from two flat, molded sections joined back-to-back. Drainage channels are formed between parallel ribs molded on the front face of each section. A collecting channel transversely intersecting the drainage channels is also formed on the front face adjacent one edge of the leaf. Conduits for applying vacuum and removing filtrate are provided between the sections by opposed grooves formed on the back faces thereof. The conduits extend the full length of the leaf and are in communication with the drainage channels on the front face through one or more ports. Means are provided to hold a filter medium in place over the ribs.

3,679,062

FILTER LEAF AND METHOD OF MAKING THE SAME

Clark B. Burkhart, Livonia, Mich., assignor to AMBAC Industries, Incorporated, Garden City, N.Y.

Filed Dec. 17, 1969, Ser. No. 885,833
Int. Cl. B01d *39/12*
U.S. Cl. 210—486 12 Claims



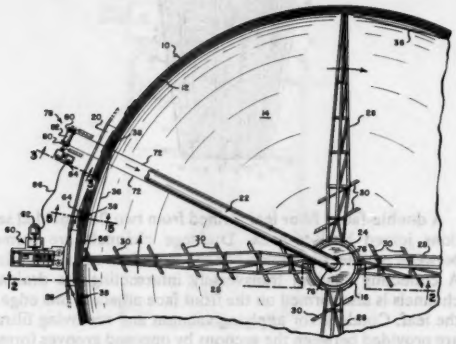
A filter leaf having a pair of spaced sheets disposed on opposite sides of a porous metallic spacer. At least one of such sheets consists of filter cloth through which a liquid flows to the spacer and thence to a peripheral or central outlet in the leaf. The spacer is desirably made from coarse woven wire cloth or expanded metal and is sprayed with a brazing material on one side thereof. The spacer and sheets are positioned together in a brazing furnace with a metallic sealing ring surrounding the spacer. Brazing material flows to the areas of contact between the sheets and the spacer, to establish a number of metallurgically bonded connections between the sheets and the areas of contact between the sheets and the spacer, to establish a number of metallurgically bonded connections between the sheets and the spacer and prevent movement of the sheets relative to the spacer.

3,679,063

MECHANISM FOR OPERATING THICKENER RAKE ARMS

Robert Lee Pate, Pittsburg, Kans., assignor to The McNally Pittsburg Manufacturing Corporation, Pittsburg, Kans.

Filed Aug. 20, 1970, Ser. No. 65,522
Int. Cl. B01d *12/00*
U.S. Cl. 210—526 **9 Claims**



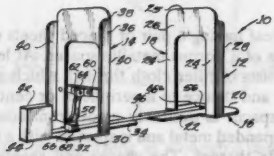
A thickener according to the invention is provided with a mechanism for operating the rake arms of the thickener without the use of central drive columns and central drive mechanism but comprising a traction means including a plurality of spaced cable carriers distributed and mounted for movement along the peripheral wall of the thickener tank, cable means respectively connecting the outer ends of the rake arms to one of the cable carriers, an endless cable drive means including a cable length extending around and engaging all of the cable carriers, means for continuously pulling with cable drive means and thereby advancing the cable carriers and the rake arms, and cable means for elevating the inner ends of the rake arms to avoid overloading in the case of an excessive amount of sediment in the thickener.

3,679,064

ARTICLE HOLDER

George E. Howkinson, 118 No. Peck Ave., La Grange, Ill.

Filed Oct. 20, 1970, Ser. No. 82,406
Int. Cl. A47b *65/00*
U.S. Cl. 211—43 **9 Claims**



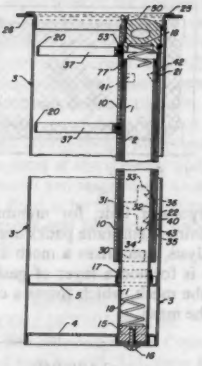
A pair of movable bookends are provided with an adjustable securing arrangement comprising a flexible tape having one end secured to one of the bookends and the opposite end portion wound on an automatic take-up reel device on the other of the bookends. An eccentric arm positively secures the tape on the second bookend to secure the two bookends at any desired spacing within the range allowed by the length of the tape.

3,679,065

UNIT FOR STORING AND SERVING ARTICLES SUCH AS CONDIMENTS

Nicholas A. Aurtemma, Miami, Fla., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 6, 1970, Ser. No. 87,392
Int. Cl. A47b *57/08*
U.S. Cl. 312—312 **6 Claims**



A unit for storing and serving articles, such as condiments, from containers, which is adaptable for countertop installation. The unit includes a containment section having an upper open end and having a first support post disposed therein. A movable second support post is telescopically connected to the first support post, and has an uppermost position wherein a portion extends above the open end of the containment sections and a lowermost position wherein substantially all of the second support post is within the containment section. Collar-like and bushing-like sections are connected to the posts to serve as means for maintaining the second support post in either the uppermost position or in the lowermost position thereof. Container holding means is connected to the second support post for holding containers in position. When the articles are to be stored, the second support post is lowered into its lowermost position which lowers the containers containing the articles within the containment section. When the articles are to be served, the second support post is telescoped to its uppermost position and latched in position. Thus, the containers are accessible to the server.

3,679,066

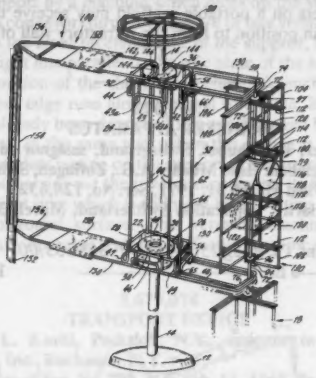
COMPACT ROTATABLE DISPLAY DEVICE

Nathan A. Leffeld, 64 W. 23rd St., Livingston, N.J.

Continuation-in-part of Ser. No. 865,222, Sept. 10, 1969, which is a continuation-in-part of Ser. No. 712,534, March 12, 1968. This application July 23, 1970, Ser. No. 57,551
Int. Cl. A47f *5/02*
U.S. Cl. 211—163 **30 Claims**

A display, comprising a central support post; at least one tier of an independently rotatable central frame rotatably carried on the post; each central frame carrying a plurality of

merchandise display extension frames, access to which is obtained by rotating the central frame; each extension frame carrying a plurality of merchandise elements. In addition, there are separate brackets for mounting an extension frame on a support panel.

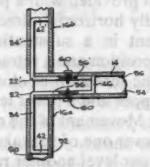


3,679,067

STORAGE RACK AND BRACKET THEREFOR

Anthony N. Konstant, Mount Prospect, Ill., assignor to Speedrack Inc., Skokie, Ill.

Filed Sept. 14, 1970, Ser. No. 71,841
Int. Cl. A47f 5/14
U.S. Cl. 211—182 **9 Claims**



A cantilever storage rack including tubular cantilever arms extending outwardly from an upright primary support. Tubular stringers are supported at the end of the cantilever arms by integral brackets having first and second wings extending perpendicular to each other. The first wing is inserted into the hollow stringer and has a projection extending across the interior opening therewithin. The second wing is inserted into the tubular cantilever arm and a second projection extends across the interior opening within the arm. Another stringer can be supported extending from the other side of the cantilever arm using another such bracket.

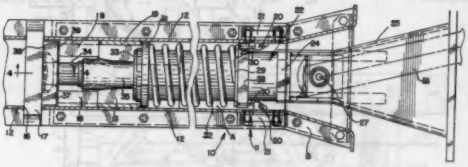
3,679,068

CUSHIONING ARRANGEMENT FOR RAILWAY CAR

William H. Peterson, Homewood, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Aug. 17, 1970, Ser. No. 64,340
Int. Cl. B61g 9/12, 9/08
U.S. Cl. 213—8 **10 Claims**

A railway car underframe is provided with a center sill having at opposite ends thereof cushion pockets each containing a hydraulic cushioning unit. The cushioning unit includes a cylinder which is connected to the coupler, the cushioning device being of the double-acting type functioning to cushion both draft and buff impacts. Stops are provided on the center sill permitting a limited amount of movement of the hydraulic cylinder in a forward direction during draft impacts and the cylinder includes a piston and piston rod arrangement, the end of which is anchored to a stop provided on the center sill at one end of the cushion pocket. A base plate is connected to the end of the piston rod and includes a concavity having an inner concave surface. The end of the piston rod has connected thereto a securing plate having a convex surface adapted to complement the concave inner surface within the concavity. The concavity has an open end facing the stop and a thrust plate which engages the stop is disposed within the



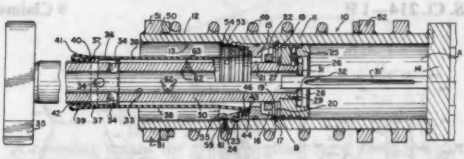
concavity. The thrust plate includes a convex central surface which complements the concave surface provided in a block rigidly secured to the end of the piston rod. The face plate is held against substantial longitudinal movement relative to the center sill structure and during eccentrically applied loads, occasioned by either draft or buff impacts, the arrangement is such that limited movement in universal direction is achieved thereby accommodating the eccentric loads without damage to the center sill structure or to the arrangement. End-of-car cushioning units of the type utilized with the present invention are disclosed in assignee's U.S. Pat. No. 3,568,856 patented Mar. 9, 1971.

3,679,069

FLEXIBLE BOOT TYPE HYDRAULIC CUSHIONING UNIT WITH BOOT PROTECTOR

William R. Shaver, Munster, Ind., and Willis H. Knippel, Palos Park, Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed Feb. 17, 1971, Ser. No. 116,048
Int. Cl. B61g 9/12
U.S. Cl. 213—43 **5 Claims**

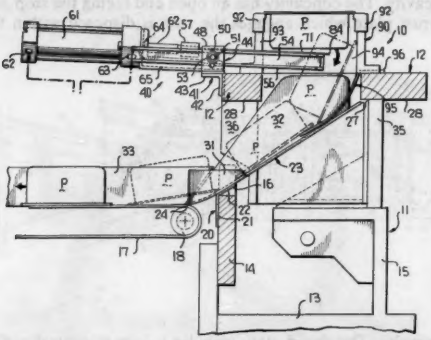


A railway car hydraulic cushioning unit includes a cylinder and piston assembly wherein a low pressure reservoir comprises a flexible boot which is constructed to eliminate sliding seals between the piston rod and an intermediate cylinder head. The boot is connected at one closed end to the piston rod and is connected at its other open end to an intermediate cylinder head. Adjacent the point of connection of the open end portion of the boot to the cylinder head a boot protector is provided which during reciprocation of the piston and piston rod assembly protects the flexible boot adjacent its point of connection against possible damage and rupture.

3,679,070
MACHINE FOR PACKAGE TURNOVER AND ORIENTATION

Alexander Skiba, Jr., Pearl River, N.Y., assignor to Royal Packaging Equipment, Inc., Maywood, N.J.

Filed July 13, 1970, Ser. No. 54,144
Int. Cl. B65g 7/00
U.S. Cl. 214—1 Q 30 Claims

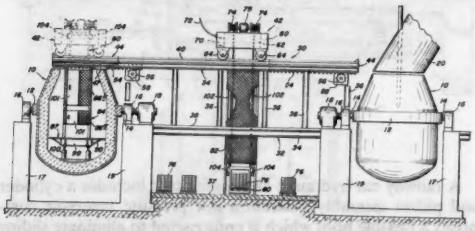


This disclosure relates to a machine for turning articles, packages or the like through approximately 180° to present the package in a desired position for subsequent processing. The machine preferably includes a plurality of pairs of chambers each of which receives a package formed from web material. Within each chamber is a platform which is progressively retracted after the packages have been severed from the web material whereupon the influence of gravity progressively tips each package during its discharge from its associated chamber. Cooperative movable and stationary guides assure the subsequent discharge of the packages to a take-away conveyor, while a vertical guide blade disposed generally in a plane between the packages maintains spacing therebetween during discharge and subsequent take-away. In addition to being tipped or turned over the packages are oriented to a desired position by providing the platforms with edges ranging from 0° to 60° relative to a plane normal to the direction of movement of the platforms.

3,679,071
APPARATUS FOR USE IN LINING VESSELS

George A. Smith, Beaver, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Feb. 9, 1971, Ser. No. 113,984
Int. Cl. B66c 19/00
U.S. Cl. 214—1 H 9 Claims

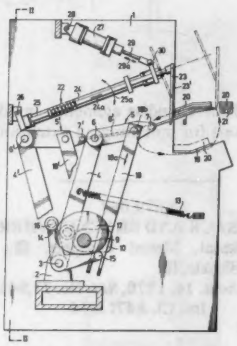


Apparatus for use in lining ground supported open-mouth metallurgical processing vessels arranged oppositely one another is disclosed. The apparatus includes an elongated support structure arranged between the vessels and upon which is disposed a transportation bed, such as parallel rails. The transportation bed includes selectively movable end sections arranged to be moved between a position outside of the vessels and a position over the mouth of each vessel. A self propelled vehicle having a compartment for storing refractory bricks is provided for travelling on the transportation bed between the vessels. Delivery means are provided in the form of an elevator cage and hoist for lowering refractory brick into a vessel where workers on a portable scaffold may receive the brick and place it in position to form the refractory wall of the vessel.

3,679,072
TRANSFER APPARATUS

Hans Mueller, Baerehubel, Switzerland, assignor to Grapha Maschinenfabrik Hans Mueller A.G., Zofingen, Switzerland

Filed March 31, 1971, Ser. No. 128,632
Claims priority, application Switzerland, March 31, 1970, 4711/70
Int. Cl. B65g 25/04, 57/30; B65h 33/00
U.S. Cl. 214—6 BA 13 Claims

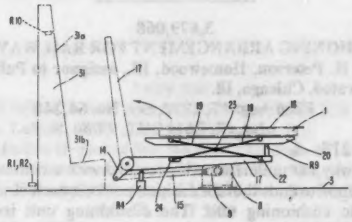


A pair of rakes, each provided with a plurality of tines projecting in a substantially horizontal direction. The rakes are mounted for movement in a substantially triangular path between an advanced position and a retracted position spaced from one another in the direction of elongation of the tines, and also between an upper and a lower level while they are in the advanced position. Movement of the rakes is controlled so as to assure that whenever one of the rakes is in the advanced position and at the upper level another rake will move to the advanced position and to the lower level before the first-mentioned rake moves away towards the retracted position.

3,679,073
APPARATUS FOR HANDLING FRAGILE SHEETS

Rene A. Malburet, Villeneuve-Saint-Georges, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France

Filed Feb. 13, 1970, Ser. No. 11,096
Claims priority, application France, Feb. 13, 1969, 6903391
Int. Cl. B65g 57/28, 61/00
U.S. Cl. 214—1 Q 2 Claims



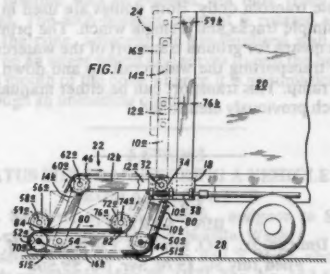
The handling of fragile sheet, e.g. glass sheet, because of its fragility, is extremely delicate and difficult. The machines for

doing it have been complex and difficult to maintain in satisfactory working order. The present invention remedies these disadvantages in both loading and unloading glass sheet from a support by a machine which picks up the sheet from a horizontal conveyor, turns it to a more or less vertical position parallel to the front receiving face of the support, then moves it in a straight line parallel to the sole plate of the support, the starting position of the sheet being chosen in such a manner that its front edge runs along the said sole plate. If a sheet of glass has already been deposited it is not damaged by the edge of the sheet. In the same way, when this device is unloading, the sheet of glass resting on the support in a more or less vertical position carries out the reverse movement; its first motion is in a straight line, which is followed by a rotating movement onto a horizontal surface. This versatile machine can be economically operated and is manufactured at low cost.

3,679,074
TRANSPORT DEVICE

Guenther L. Kuehl, Peekskill, N.Y., assignor to Guenther Systems, Inc., Buchanan, N.Y.

Division of Ser. No. 798,366, Feb. 11, 1969, Pat. No. 3,578,145. This application April 22, 1970, Ser. No. 38,639
Int. Cl. B60p *1/38*
U.S. Cl. 214—83.26 **7 Claims**

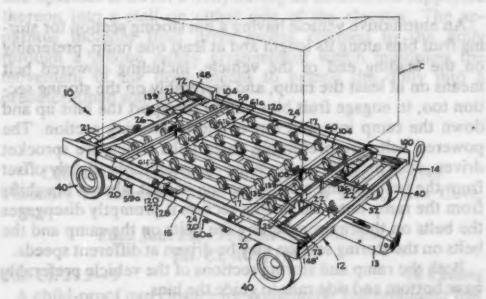


An adjustable transport device is provided which includes a multiple chain drive system for transporting unit loads of material between a number of vertically and laterally displaced locations. In one embodiment, the device is provided as a truck attachment, and is a second embodiment, the vertical lift is permanently installed in a truck dock.

3,679,075
TRAILER

James R. Guyaux, San Jose; Donald Le Duc, Sunnyvale, and Dean T. McDonald, San Jose, all of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Oct. 21, 1970, Ser. No. 82,670
Int. Cl. B60p *1/52*
U.S. Cl. 214—84 **6 Claims**

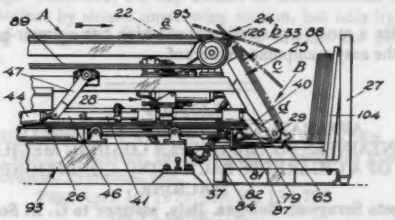


A cargo container trailer has a generally rectangular bed mounted for rotating through 360° and is provided with means for receiving or discharging cargo containers over either end or over either side edge.

3,679,076
METHOD AND APPARATUS FOR HANDLING SHEET MATERIAL

Alfred H. Miller, Toledo, Ohio, and George A. Dean, Kansas City, Mo., assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed July 20, 1970, Ser. No. 56,529
Int. Cl. B65g *57/28*
U.S. Cl. 214—152 **8 Claims**

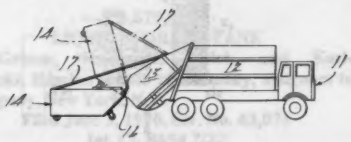


This application discloses transferring glass sheets from a horizontal conveyor to a vertical storage buck by permitting each sheet to ride over and drop off a driven roll at the discharge end of the conveyor and onto the angled face of a vacuum platen which receives, aligns and retains it. The sheet is then carried forward by the platen, swung from the receiving to a stacking angle and released, whereupon the conveyor and platen index themselves rearwardly and the platen returns to receiving position.

3,679,077
COUPLER BETWEEN A DUMPABLE CONTAINER AND A RECEIVING CONTAINER

William Gennick, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 29, 1970, Ser. No. 85,019
Int. Cl. B65f *3/02*
U.S. Cl. 214—302 **3 Claims**



A coupling means for pivotally attaching a dumpable container to a hopper. As the container pivots it engages a rotatable portion of the coupling means which moves with the container and locks the container to the hopper.

The coupling means comprises primarily a pair of slotted members, one of which is rotatable from an open position in which the slots are aligned to a closed, locked position.

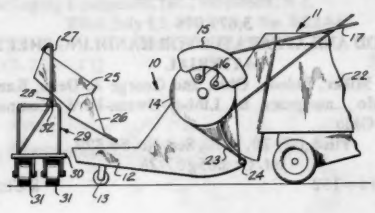
3,679,078
BASKET DEVICE FOR REFUSE TRUCKS

Walter Wetzel, 34825 Dryden Drive, Sterling Heights, Mich.

Filed Jan. 29, 1971, Ser. No. 110,864
Int. Cl. B65f *3/02*
U.S. Cl. 214—302 **4 Claims**

An attachment for refuse trucks which will facilitate easy

handling of refuse that is being carted away. The device in-



cludes a motor operated basket which has counter-balances for the easy manipulation thereof.

3,679,079

APPARATUS FOR FEEDING CIGARETTE CONTAINERS TO THE HOPPER LOADING MECHANISM OF A CIGARETTE PACKAGING-CONDITIONING MACHINE

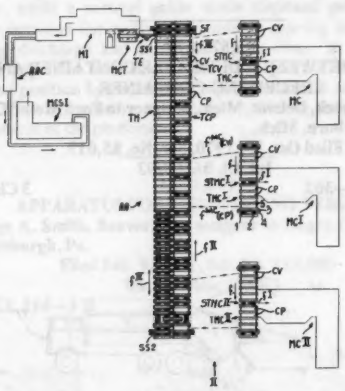
Ariosto Seragnoli, Bologna, Italy, assignor to G. D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Serganoli, Bologna, Italy

Filed Aug. 5, 1969, Ser. No. 847,690

Claims priority, application Italy, Aug. 6, 1968, 842214 A/68

Int. Cl. B65f *3/02*

U.S. Cl. 214—302 **3 Claims**



Disclosed herein is an apparatus for supplying cigarette containers to the loading mechanisms for hoppers of cigarette packaging-conditioning machines. The apparatus supplies containers filled with cigarettes through a storage device so that the operating continuity of the cigarette packaging-conditioning machine is assured independently of the operating continuity for the cigarette manufacturing machine associated therewith. The storage device intervenes to ensure maximum operating efficiency for both the cigarette manufacturing machines and for the packaging-conditioning machine by storing the containers of cigarettes produced by the manufacturing machine when a failure occurs in the packaging machine; and, by supplying the stored containers to the packaging machine during proper operation of all of the apparatus and upon failure of the manufacturing machine.

3,679,080

PROCESS FOR LAUNCHING AND RECOVERY OF TOP-OF-VEHICLE TRANSPORTED WATERCRAFT

Robert Wendell Fulcher, 9202 Wofford Lane, Prince George's County, Md.

Filed July 17, 1970, Ser. No. 55,750

Int. Cl. B60r *9/00*

U.S. Cl. 214—450 **1 Claim**

A launching and recovery process for top-of-vehicle transported watercraft in which the watercraft always remains correct side up and which is a true one man operation, even for heavier watercraft. The process is accomplished by means of a relatively short length primary dolly located under the watercraft (that is removed only when the watercraft is floated) and a removable transom dolly. Both dollies are used in conjunction with simple tracks and a single winch. The primary dolly provides a means for ground transport of the watercraft and a means for transporting the watercraft up and down a marine launching ramp. This transport can be either manual or aided by the winch previously mentioned.

3,679,081

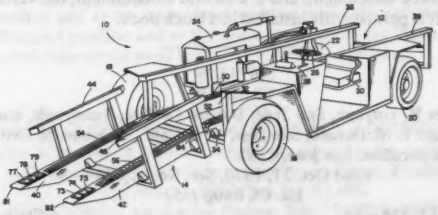
BIN CARRIER

Wilson B. Duncan, Jr., P.O. Box 846, Corning, Calif.

Filed July 30, 1970, Ser. No. 59,560

Int. Cl. B60p *1/36*

U.S. Cl. 214—516 **1 Claim**



An automotive vehicle having a bin storing section for storing fruit bins along its length and at least one ramp, preferably on the leading end of the vehicle, including powered belt means on at least the ramp, and preferably on the storing section too, to engage fruit bins and to transport the bins up and down the ramp into and out of the bin storing section. The powered belts are preferably chain belts which are sprocket driven, and the belts on the ramp are preferably slightly offset from the belts on the storing section so that when a bin shifts from the ramp onto the storing section it promptly disengages the belts on the ramp, whereby the belts on the ramp and the belts on the storing section may be driven at different speeds.

Both the ramp and storing sections of the vehicle preferably have bottom and side rails to guide the bins.

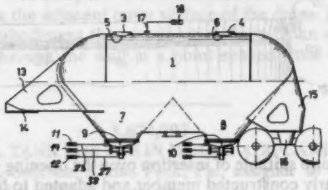
In one embodiment, the vehicle has ramps at both ends thereof.

3,679,082

BULK TRANSPORTER

Fritz Gramlich, Mosbach/Baden, Germany, assignor to Ludwig Spitzer sen. KG, Mosbach/Baden, Germany

Filed June 8, 1970, Ser. No. 44,143
Claims priority, application Germany, Aug. 14, 1969, P 19 41 351.5
Int. Cl. B60p 1/42; B65p 1/60
U.S. Cl. 214—518 10 Claims



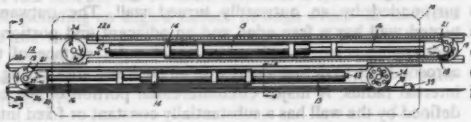
A bulk transporter comprises a pressure-retentive container adapted to be displaced along the ground and provided with a pair of downwardly converging discharge cones. Each cone in turn is provided with an internal arch-breaker and has a fluidized internal wall to prevent the bulk from becoming compacted. The arch-breaker element is rotated around the inside of the cone, adjacent the gas-fluidized wall. This element can be an auger which also serves to pull the bulk toward the outlet mouth of the cone whence it is pneumatically blown away through an unloading conduit.

3,679,083

APPARATUS FOR TRANSFERRING A VEHICLE TO AND FROM AN ELEVATOR

Duane V. Sanders, Spokane, Wash., assignor to Systematic Multi-Level Parking Company, Seattle, Wash.

Continuation of Ser. No. 704,096, Feb. 8, 1968, abandoned.
This application May 10, 1971, Ser. No. 143,686
Int. Cl. B66f 9/14; E04b 6/06
U.S. Cl. 214—730 4 Claims



This invention relates to a self-contained apparatus for extending an object from a central point in one of a plurality of directions and particularly to a new and improved automobile parking apparatus. The apparatus is mounted on an elevator and operates to direct a dolly having an automobile supported thereon into a stall on either side of the elevator. The apparatus includes fluid drive means coupled to the dolly through a unique pulley arrangement which multiplies the movement of the drive means to extend the dolly into a predetermined stall as desired.

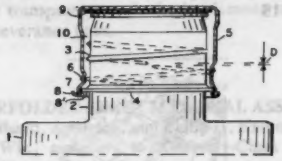
3,679,084

CHILD-PROOF CONTAINER CLOSURE MEANS

Theodore F. Aronson, 2108 Sunrise Key Blvd., Glen Cove, N.Y.

Filed Jan. 22, 1971, Ser. No. 108,868
Int. Cl. A61j 1/00
U.S. Cl. 215—9 10 Claims

A child-proof cap closure for containers. The container has a neck with a partial thread and a flange mounted below the thread. The cap has an annular recessed portion adapted to snap over the flange, and the cap has a partial thread adjacent the narrow portion. The positions of the said two partial threads are chosen so that the cap is snapped over the flange by turning the cap, and at the same time causes the threads to



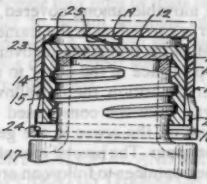
disengage. Therefore, the cap cannot be disconnected from the container by simple unscrewing motion, but only by unscrewing and pulling simultaneously to engage the partial threads.

3,679,085

CHILD-PROOF CAP FOR MEDICINE BOTTLES

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed April 16, 1971, Ser. No. 134,702
Int. Cl. B65d 55/02
U.S. Cl. 215—9 9 Claims



A child-proof cap for medicine bottles or the like having an inner threaded closure member and an outer overcap or driver. The closure and driver have co-operating one-way driving means for screwing the closure onto the bottle which are engaged by pushing the driver down, and second co-operating driving means for unscrewing the closure which are engaged by pulling the driver upwardly and squeezing its walls inwardly.

3,679,086

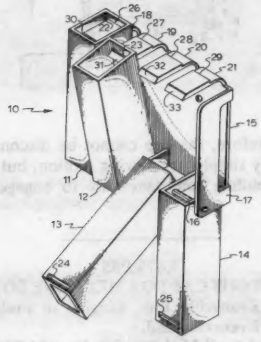
LIQUID STORAGE TANK

Werner Grimm, Hasserodt, Ulrich, and Karl-Heinz Olschewski, Hamburg, both of Germany, assignors to Shell Oil Company, New York, N.Y.

Filed June 3, 1970, Ser. No. 43,071
Int. Cl. B65d 7/22
U.S. Cl. 220—10 10 Claims

A liquid storage tank having inner and outer parallel spaced walls of substantially U-shaped vertical transverse cross-section, the outer wall being of metal and the inner wall being of a liquid resistant plastic material. The outer wall is closed at the top by a horizontal plate and the interior of the inner wall is in fluid communication with the space between the inner and outer wall. A drainage may be provided at the bottom of the outer wall for removing liquid from the inner wall.

3,679,087
CONTAINER APPARATUS
David L. Poli, 10201 Santa Paula N.E., Albuquerque, N. Mex.
Filed March 22, 1971, Ser. No. 126,460
Int. Cl. B65d 25/24
U.S. Cl. 220—18 13 Claims

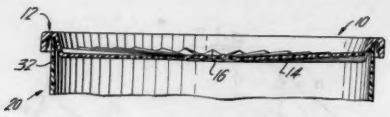


Container apparatus having a container pivotally mounted on a frame to be movable among covered, load, and unload positions. A cover is carried upon the frame, and is insertable into a slot on a wall of the container to cover it. A protrusion is formed on the top surface of the cover to constrain the container in the covered position, thereby allowing the container to be rotated away from the constrained cover position by downward pressure on the cover in the general direction of rotation of the container. The pivotal mount is disposed on the frame to cause the container to follow an arc upon rotation, in which the slot of the container engages the cover at a point away from the back mount to define the load position. Further rotation of the container from the covered and load positions disengages the cover from the slot to define an unload position.

3,679,088
PRESS TYPE CLOSURE
James B. Swett, Barrington, and Jack V. Croyle, Woonsocket, both of R.I., assignors to Dart Industries, Inc., Los Angeles, Calif.
Filed Feb. 3, 1970, Ser. No. 8,228
Int. Cl. B65d 41/00
U.S. Cl. 220—42 R 6 Claims

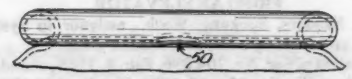
A closure suitable of insertion over the opening of a tubular or similarly constructed member and adapted to hermetically seal that opening. The closure construction includes a biased center main wall that particularly adapts it for placement upon the tubular member by a light application of finger pressure to the approximate center of the main wall. Also disclosed is the method of application of such a closure upon a tubular member, and a combined snap-on and locking feature for this closure.

3,679,089
PRESS TYPE CLOSURE
James B. Swett, Barrington, and Jack V. Croyle, Woonsocket, both of R.I., assignors to Dart Industries, Inc., Los Angeles, Calif.
Continuation-in-part of Ser. No. 8,228, Feb. 3, 1970. This application Aug. 27, 1970, Ser. No. 67,340
Int. Cl. B65d 39/00
U.S. Cl. 220—42 C 5 Claims



A closure suitable of insertion over the opening of a tubular or similarly constructed member and adapted to hermetically seal that opening. The closure construction includes a sloping, corrugated top wall dimensioned according to a plurality of design parameters such that particularly adapts it for placement upon the tubular member by the application of pressure to the approximate center of the top wall.

3,679,090
VENTED CURL FOR AEROSOL DOME
Stanley J. Miller, and James P. Davidson, both of Chicago, Ill., assignors to National Can Corporation, Chicago, Ill.
Filed April 9, 1970, Ser. No. 26,872
Int. Cl. B65d 7/42
U.S. Cl. 220—67 7 Claims



An aerosol dome having a lower end adapted to be attached to the upper end of a container and having an upper open end surrounded by an outwardly turned wall. The outwardly turned wall has a free edge and an adjacent end portion in overlapping relation with an adjacent outer surface of the aerosol dome to define a curl with an enclosed area having an internal radius. A major circumferential portion of the curl defined by the wall has a substantially constant or fixed internal radius which locates the free edge in contacting engagement with the outer surface of the dome and at least one selected circumferential portion of the curl has a radius at the free edge which is less than the fixed internal radius to space that portion of the free edge from the outer surface and provide a vent opening for the internal area of the curl.

3,679,091
VENTED CURL FOR AEROSOL DOME
Robert F. Krupp, and Stanley J. Miller, both of Chicago, Ill., assignors to National Can Corporation, Chicago, Ill.
Filed April 9, 1970, Ser. No. 26,965
Int. Cl. B65d 7/42
U.S. Cl. 220—61 5 Claims

An aerosol dome having a lower end adapted to be attached to a container and an upper end having an opening sur-

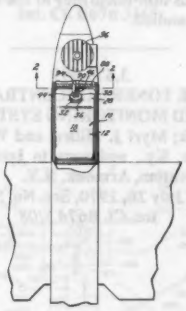
rounded by an outwardly turned wall. The outwardly turned wall has a free end portion in overlapping and contacting engagement with an outer surface of the dome to define an enclosed area of uniform cross-sectional configuration. The integral outwardly turned wall has openings defined therein with at least a portion of each of the openings being spaced from the free end portion and the adjacent outer surface of the dome to place the enclosed area in communication with the surrounding atmosphere. In one embodiment the opening is produced by forming a recess extending from the free edge through the free end portion with the base of the recess being spaced from the adjacent outer surface of the dome. In an alternative embodiment the opening is defined by an aperture extending through the wall at a point spaced from the free end.

3,679,092

FUEL TANK FOR USE IN MODEL AIRPLANES

Matthew A. Sullivan, Elkins Park, Pa., assignor to Sullivan Products, Inc., Willow Grove, Pa.

Filed Sept. 15, 1969, Ser. No. 857,869
Int. Cl. B65d *25/00*
U.S. Cl. 220—85 R **6 Claims**



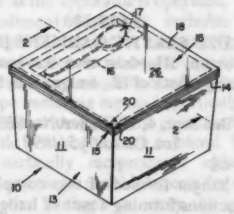
A fuel tank for use in model airplanes is disclosed, the fuel tank including an angled surface through which the fuel feed line and vent line pass to permit mounting of the fuel tank at the centerline position in "profile" fuselages, and between closely spaced or behind partly obstructed bulkheads in built-up fuselages.

3,679,093

COMBINATION FOOD CONTAINER AND IMPLEMENT FOR EXTRACTING THE CONTENTS

Henry M. Chang, Bronx, N.Y., assignor to First Dynamics, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 15,413, March 2, 1970. This application Oct. 26, 1970, Ser. No. 83,941
Int. Cl. A47g *19/22*
U.S. Cl. 220—90.2 **13 Claims**



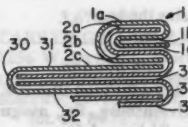
A food container has a two-layer cover, the lower layer of which is permanently adhered to the container body and has a depressed recess or trough therein housing an implement for extracting the contents. The upper layer of the cover is superimposed upon and releasably adhered to the lower layer. The lower layer has severance lines defining a severable tongue in which the recess lies. The upper layer which may or may not be transparent, seals the implement in its recess as well as the severance lines.

3,679,094

INTERFOLDED SHEET MATERIAL ASSEMBLY

Walter D. Nissen, Appleton, and Philip G. Hammond, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed June 1, 1970, Ser. No. 42,314
Int. Cl. A47k *10/20*
U.S. Cl. 221—50 **1 Claim**



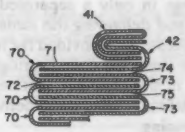
Interfolded webs such as those of tissue paper are provided in a stack. The upper two webs of the stack are so folded and interfolded as to provide four plies or folds of an upper web to the hand of a user to permit grasping of the full folded thickness for withdrawal. A method and apparatus to effect the particular folding of the upper starter web and next lower web of the stack are illustrated.

3,679,095

FOLDED SHEET MATERIAL AND METHOD AND APPARATUS THEREFOR

Walter D. Nissen, Appleton, and Philip G. Hammond, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed June 1, 1970, Ser. No. 42,348
Int. Cl. B65h *1/04*
U.S. Cl. 221—50 **3 Claims**



Tissue webs which may be of substantially indefinite length and suitable for cutting to a convenient size for packaging are folded and interfolded. The upper or starter web of the stack is folded in quarters and so arranged that this upper web is readily grasped by the fingers of a hand and easily removed from the stack. The next lower web being interfolded with the upper is partially withdrawn from the stack so that it is presented for easy removal also. Several apparatus arrangements and methods for effecting the folding are described.

3,679,096

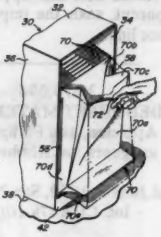
BAG HOLDER AND OPENING APPARATUS

Malcolm E. Musser, P.O. Box 386, Jackson Center, Ohio

Filed April 22, 1970, Ser. No. 30,807
Int. Cl. B65h *1/08*
U.S. Cl. 221—56 **4 Claims**

Structure for retaining and supporting a supply of bags, such as paper bags or the like. As each bag is manually removed

from the supply thereof, the bag is automatically opened by



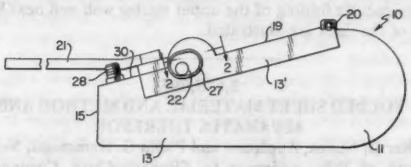
the means which retains the bag.

3,679,097

COILED SPRING SEPARATOR DEVICE AND METHOD

James C. Gunter, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed July 16, 1970, Ser. No. 55,414
Int. Cl. B65h *9/00*
U.S. Cl. 221—163 **20 Claims**



A housing having a chamber for receiving a supply of coiled springs with the housing having an exit means for the serial ejection of the springs. The housing has a separator means for receiving the springs in only a separated condition thereof from the chamber and delivering the same in a serial manner to the exit means. Means are provided for imposing an air flow into the chamber to cause the coiled springs to be subjected to a turbulent action in the chamber that separates the springs and causes an occasional spring to be delivered to the separator means of the housing.

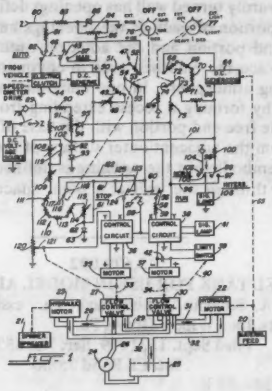
3,679,098

VEHICULAR MATERIAL SPREADER CONTROL APPARATUS

Paul C. Weiss, Evanston, Ill., assignor to Ambac Industries, Incorporated, Garden City, N.Y.

Filed April 21, 1969, Ser. No. 817,732
Int. Cl. A01c *19/20*
U.S. Cl. 222—23 **17 Claims**

The system for spreading the particulate material is interconnected with the dispensing system to automatically adjust the dispensing rate concomitantly with any adjustment in width of spread to maintain constant the spreading density. In one embodiment the speed control circuit for the spinner motor is interconnected with the speed regulating circuit for the dispenser motor. In another embodiment the feeding mechanism for dispensing and the spinner are driven by the same prime mover and the dispensing rate is further controlled by a speed regulated hopper gate. In a further embodiment the speed control circuit for the spinner motor is interconnected with a hopper gate while the feeding mechanism is independently controlled. Several forms of compensation are



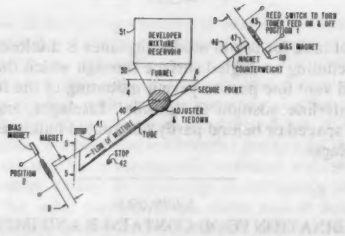
provided for various non-linearities in the systems and for the various materials handled.

3,679,099

BALANCE TYPE TONER CONCENTRATION SENSING AND MONITORING SYSTEM

Michael K. Bullock; Myrl J. Miller, and William F. Voit, Jr., all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 28, 1970, Ser. No. 58,808
Int. Cl. B67d *5/08*
U.S. Cl. 222—55 **10 Claims**



A toner monitoring means including a sensor monitors the density of a mixture of toner and carrier in a developer means arranged for developing latent images in a xerographic process. The sensor in the monitoring means turns a toner feed mechanism on and off to maintain the toner concentration in the developer means at any selected density operating point.

3,679,100

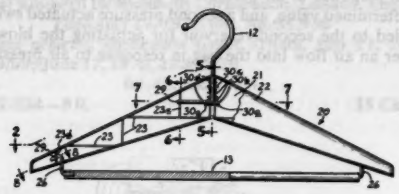
MOLDED PLASTIC GARMENT HANGER

Donald L. Brorson, Hinsdale, and Raymond A. Magnuson, Western Springs, both of Ill., assignors to Beatrice Food Co., Chicago, Ill.

Filed Sept. 4, 1969, Ser. No. 855,251
Int. Cl. A47j *51/098*
U.S. Cl. 223—88 **9 Claims**

A garment hanger formed of two complementary molded plastic shell sections forming a pair of hanger arms supported by a wire forming a T-type, ball-type, or conventional hook type hanger support. The hanger may be furnished with a horizontal rod below the arms and attached to the arms with

wire hooks, which may also be formed so as to provide skirt hooks. The hanger may also be furnished with a centrally

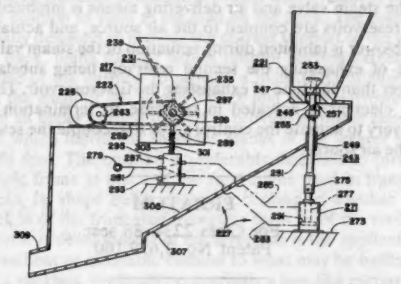


located hook depending from the shell for the purpose of hanging umbrellas or other garment accessories.

3,679,101
APPARATUS FOR PROPORTIONING AND MIXING PARTICULATE MATERIALS

Gerald T. Aldridge, 4500 Dearing Rd, Memphis, Tenn.

Filed Sept. 5, 1968, Ser. No. 757,564
Int. Cl. B67d 5/48
U.S. Cl. 222—136 **2 Claims**



Apparatus for proportioning and mixing particulate or granular material and particularly for handling plastic granular material constituting the various ingredients of a granular plastic mixture or blend of material adapted to be fed into plastic extruders, blow molding plastic forming machines, or the like.

The apparatus of a basic embodiment disclosed includes at least one rotary type metering unit adapted for metering the major part or portion of the granular plastic mixture or blend and includes a smaller rotary metering unit having adjustable socket-like chambers adapted to receive a certain quantity of granular material and to dispense the material at a substantially constant rate as the apparatus is operated.

Another embodiment disclosed includes a vertically reciprocating plunger having recess means defining a measuring chamber adapted to measure a certain quantity of material and at a certain rate. The embodiment of the invention utilizing the plunger type metering means is particularly useful for metering color concentrate pellets or granules in the proportioning of the plastic granule mixture or blend. The plunger is adapted to be vertically reciprocated either by direct mechanical action utilizing a multi-lobe cam for direct vertical reciprocation of the plunger or may be pneumatically operated through a timed air valve synchronously connected with one of the large volume rotary metering means dispensing another ingredient of the plastic granule mixture.

3,679,102
AEROSOL COMPOSITION AND METHOD FOR PRODUCING SAME

Roger Charle, Soisy; Gregoire Kalopissis, Paris, and Charles Zviak, Franconville, all of France, assignors to L'Oreal, Paris, France

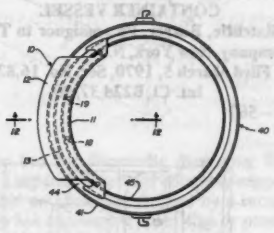
Filed Feb. 4, 1970, Ser. No. 8,726
Claims priority, application Luxembourg, Feb. 4, 1969, 57.891
Int. Cl. A61j 3/00; A61k 7/12
U.S. Cl. 222—192 **4 Claims**

A sprayable aerosol composition is prepared by encapsulating a material in a microcapsule and introducing into said microcapsule a fluid under a pressure essentially equal to the pressure in the aerosol container from which said composition is dispensed. Also provided is an aerosol dispenser containing under pressure said microcapsules dispersed in an aerosol propellant.

3,679,103
COMBINATION CARRYING HANDLE AND POUR SPOUT

John F. Chmela, 7256 W. Davis St., Morton Grove, Ill., and Seymour F. Fohrman, 1171 Longmeadow, Glencoe, Ill.

Filed March 6, 1970, Ser. No. 17,122
Int. Cl. B67d 5/06
U.S. Cl. 222—192 **1 Claim**



An inexpensive multi-purpose device which is adapted for use with cans such as paint cans and the like, as a pour spout, an easy grip handle for carrying one or two of such cans, as a wiping surface for removing, for example, excess paint from paint brushes, and as a carrying handle for packages.

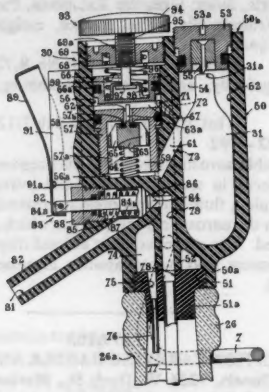
3,679,104
SIPHON-VALVE STOPPER COMPRISING A BODY ENCLOSING CARBON DIOXIDE CAPSULE

Henri Philibert Giroud, Epinay-sur-Seine, France, assignor to Societe d'Exploitations et de Realisations Industrielles et Commerciales Serico, Epinay-sur-Seine, France

Filed June 18, 1970, Ser. No. 47,542
Int. Cl. B05b 7/32
U.S. Cl. 222—396 **2 Claims**

A siphon-valve stopper adapted for use on containers formed with a neck and utilizing a small CO_2 cartridge of conventional type, said stopper being provided with a pressure reducing device and a gas stop valve, wherein said gas stop valve comprises a valve member and a valve seat incorporated in said pressure reducing device, with control members co-acting with an expansion piston so as to move said piston away from a rod rigid with said valve member when the control knob of the device is rotated in a given direction, whereby said valve member engages its seat, thus preventing the gas from said cartridge from flowing beyond the high-pres-

sure chamber of the pressure reducing device. The siphon-valve stopper may also be utilized without any risk with ordinary glass bottles containing indifferently a gaseous, or a non-carbonated liquid or beverage, for example beer.

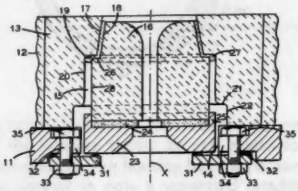


3,679,105

NOZZLE ARRANGEMENT FOR MOLTEN METAL CONTAINER VESSEL

Temple W. Ratcliffe, Beaver, Pa., assignor to The Badcock & Wilcox Company, New York, N.Y.

Filed March 5, 1970, Ser. No. 16,839
Int. Cl. B22d *37/00*
U.S. Cl. 222—567 **2 Claims**



An improved nozzle arrangement for a molten metal container vessel in which the nozzle block passage and nozzle received therein have matching surfaces inclined with respect to the nozzle pouring axis, these matching surfaces being disposed to define a sealable joint between the nozzle and nozzle block and allow installation of the nozzle in the block by insertion into the passage from outside the vessel.

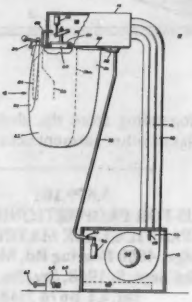
3,679,106

CONTROL SYSTEM FOR GARMENT FINISHING APPARATUS

William L. North, Morristown, and William J. Beckett, Talbott, both of Tenn., assignors to Forenta, Limited, Kincordine, Ontario, Canada

Filed March 16, 1971, Ser. No. 124,834
Int. Cl. D06c *15/00, 5/00;* **A41h** *5/02;* **D06f** *59/00, 71/00*
U.S. Cl. 223—73 **20 Claims**

A control system for a steam-air garment finisher, such as a pants topper, having an inflatable bag for supporting the garment, a solenoid valve for injecting steam into the bag, and a blower for delivering a flow of air into the bag. The system includes first and second air reservoirs, first and second air bleeding orifices, first and second control valves normally coupling the reservoirs to a source of air under pressure, and a manually actuated control element for actuating the control valve respectively to couple the reservoirs to the bleeding orifices. A first pressure actuated switch is coupled to the first reservoir for actuating the steam valve to inject steam into the bag in response to air pressure in the first reservoir above a predetermined value, and a second pressure actuated switch is coupled to the second reservoir for actuating the blower to deliver an air flow into the bag in response to air pressure in the second reservoir above a predetermined value. Actuation of the steam valve and air delivering means is inhibited when the reservoirs are coupled to the air source, and actuation of the blower is inhibited during actuation of the steam valve, the time of exhausting the second reservoir being substantially longer than the time of exhausting the first reservoir. The control element is actuated in response to termination of air delivery to actuate the control valve to recouple the reservoirs to the air source.



ERRATUM

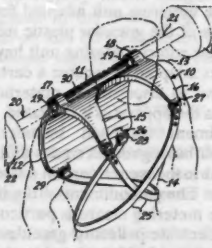
For Class 223—88 see:
Patent No. 3,679,100

3,679,107

LIFTING YOKE

Walter E. Perrine, 7216 W. Pierson, Phoenix, Ariz.

Filed Dec. 28, 1970, Ser. No. 101,467
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 P **4 Claims**



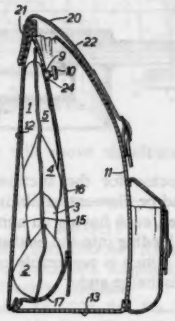
A weight lifting yoke for shoulder use wherein the weight is distributed over the shoulders of the wearer and off center of the end of the spinal column.

3,679,108

CARRIER DEVICES FOR SHOULDER-STRAP SUPPORT ON THE BACK

John Anthony Ingram, Ulverston, England, assignor to National Research Development Corporation, London, England

Filed July 17, 1970, Ser. No. 55,936
Claims priority, application Great Britain, July 17, 1969, 36,009/69; June 17, 1970, 29,473/70
Int. Cl. A45f 3/04
U.S. Cl. 224—8 R 15 Claims



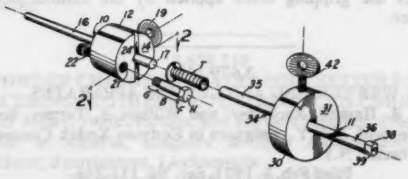
Load-carrying devices adapted to be supported on the back by means of shoulder straps are provided with a resilient or inflatable cushion to yield to the load on the back. The cushion is specially designed to provide the correct support of the load on the back, being formed with a bottom portion extending widthwise of the cushion to provide a main band of support around the small of the wearer's back and being narrower in width in an upper portion thereof to provide an upper zone of support which leaves the shoulder blades of the wearer substantially free. The cushion is preferably designed to form a pneumatic frame in place of the rigid frame used in framed-rucksacks, its shape being chosen according to whether the rucksack is of the truncated triangular form or of the rectangular form. A development of the invention is the application of the resilient or inflatable cushion to what may be basically termed a ruckbox, preferably comprising a box-like carrier attached to a shallow frame fitted with the resilient or inflatable cushion and carrying the shoulder straps.

3,679,109

METHOD AND APPARATUS FOR SEVERING TUBING

John O. King, Jr., 3990 N. Ivy Rd., Atlanta, Ga.

Continuation-in-part of Ser. No. 711,368, March 7, 1968, abandoned. This application Dec. 4, 1969, Ser. No. 882,126
Int. Cl. B26f 3/00
U.S. Cl. 225—2 16 Claims



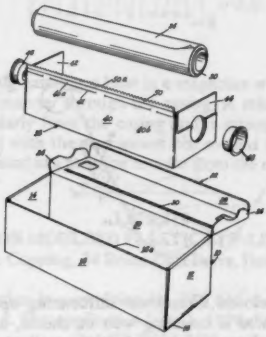
Method and apparatus for severing thin walled tubing into selected lengths wherein the method includes circumferentially scoring the outside of the tubing at a predetermined point to produce a narrow weakened portion therearound and subsequently supporting the tubing internally while applying separating forces to the inside of the tubing at the weakened portion to sever the tubing at the weakened portion. The apparatus includes means for selectively measuring the length of the tubing to be severed and means for supporting the tubing internally while applying separation forces to the inside thereof at a circumferentially extending weakened portion to cause the same to sever at the weakened portion. The apparatus also includes means for producing a circumferentially extending weakened portion in the tubing.

3,679,110

CUTTER-TYPE BOX FOR DISPENSING PACKAGING FILM WITH PROTECTIVE MOUNTING FOR THE CUTTER

Orrin Burr Stine, New York, N.Y., assignor to Borden Inc., New York, N.Y.

Filed June 25, 1970, Ser. No. 49,870
Int. Cl. B26f 3/02
U.S. Cl. 225—47 6 Claims



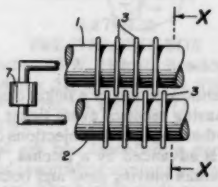
A cutter-type box for dispensing packaging film includes means such as a separate insert for rotatably supporting a roll of the film within an enclosure defined by a rectangular box container which has a closeable cover flap or panel. This film in the enclosure is fed outwardly through a transverse slit defined in the top cover for delivery over an edge at which a cutter is arranged. The cutter is supported on a panel or flap with a foldable portion permitting the cutter to be oriented either upright to project above the surface of the top cover when the cover is in a closed position or downwardly so as to be maintained within the enclosure and protected by the cover from damage during shipment.

3,679,111

APPARATUS FOR THE PRODUCTION OF FIBROUS MATERIALS

Peter Volans, Chepstow, England, assignor to Monsanto Chemicals Limited, London, England

Filed June 9, 1970, Ser. No. 44,831
Int. Cl. B26f 3/02
U.S. Cl. 225—97 3 Claims



Orientated and foamed thermoplastic material is fibrillated by passing the material through a nip comprised of a pair of

rotatable rolls each having a series of radially extending ribs with the ribs of one roll intermeshing with the ribs of another roll, the rolls being movable with respect to each other so that the degree of interpenetration of the ribs may be controlled.

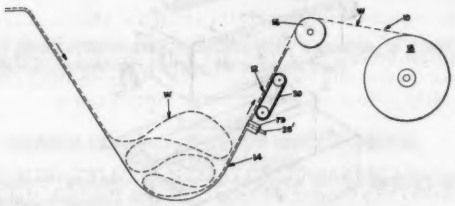
ERRATUM

For Class 356—114 see:
Patent No. 3,679,309

3,679,112
VACUUM BELT GUIDING MEANS

James A. Black, Kent City, and Harry Russell Farwell, Cedar Springs, both of Mich., assignors to James A. Black, Kent City, Mich.

Filed Feb. 26, 1971, Ser. No. 119,181
Int. Cl. B65h 25/06
U.S. Cl. 226—3 16 Claims

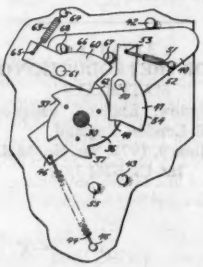


Herein is disclosed directional influencing apparatus for strip stock such as a traveling web or sheets, employing a traveling recirculatory vacuum belt controllably shifted to variable angular orientation.

3,679,113
TICKET DISPENSER

Paul E. Startzman, Bryn Mawr, Pa., assignor to Philadelphia Manufacturing Company, Inc., Philadelphia, Pa.

Filed April 23, 1971, Ser. No. 136,968
Int. Cl. B65h 17/22
U.S. Cl. 226—76 3 Claims

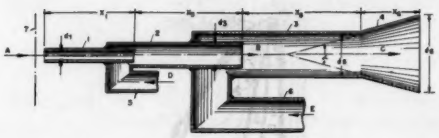


The present invention relates to a ticket dispenser in which a strip of tickets having recesses every ticket length between one ticket and another engages in projections on a ticket feeding wheel, which is advanced by a ratchet. The ratchet has both a fixed pawl and a moving pawl and both pawls are cam controlled so that the fixed pawl is free to advance when the moving pawl is restrained against advancing and the moving pawl is free to advance when the fixed pawl is restrained against advancing.

3,679,114
MULTI-STAGE INJECTOR FOR THREAD WITHDRAWAL

Karl Ostertag, Elsenfeld, and Heinrich Nilgens, Erlenbach/Main, both of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed July 15, 1970, Ser. No. 55,104
Claims priority, application Germany, July 19, 1969, P 19 36 916.5
Int. Cl. B65h 17/32
U.S. Cl. 226—097 15 Claims

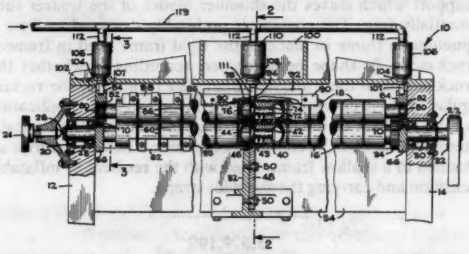


A multi-stage injector for the suction withdrawal of a rapidly moving thread or filament exhibiting at least two suction conduits or tubes, each having an annular air injector at their discharge ends leading into the next suction conduit or a final mixing conduit which is preferably provided with a diffusor conduit at its discharge end.

3,679,115
UNIFORM PRESSURE DRAW ROLLS

David K. Stock, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Dec. 4, 1970, Ser. No. 95,282
Int. Cl. B65h 17/20
U.S. Cl. 226—177 7 Claims



Uniform gripping pressure between two draw rolls for feeding a film web is achieved by providing three power cylinders along a movably mounted roll to press it into contact with the web and against a fixed opposed roller, and by providing a support yoke intermediate the ends of the opposed roller to counter the gripping force applied by the central power cylinder.

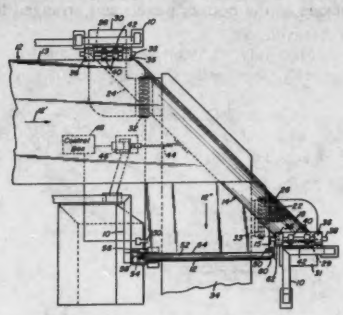
3,679,116
WEB TURNING AND GUIDING APPARATUS

David R. Hamlin, Rochester, and William A. Torpey, Scottsville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,216
Int. Cl. B65h 25/26
U.S. Cl. 226—197 11 Claims

An air bar is provided in the path of web travel to change the direction of travel and the air bar position is automatically adjusted to compensate for minor lateral changes in the path of web travel. The web is laterally constrained a short distance downstream of the air bar and the constraining means is

adapted to move simultaneously with the air bar in order that when the air turning bar moves to make a correction in web



position, the web will move simultaneously by the same amount.

3,679,117

WEB FEEDING APPARATUS

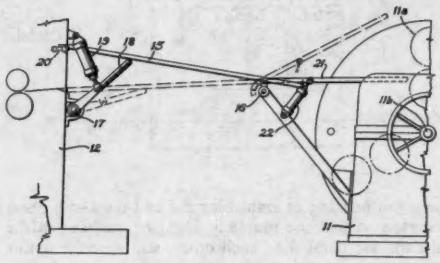
John Arthur Moss, Stockport, England, assignor to Henry Simon Limited, Cheshire, England

Filed Jan. 22, 1971, Ser. No. 108,732

Claims priority, application Great Britain, Feb. 6, 1970, 5,759/70

Int. Cl. B65h *23/32*

U.S. Cl. 226—199 18 Claims



Web feeding apparatus for directing a plurality of webs arranged in side-by-side relationship and issuing from a slitting machine selectively to different levels of a rotary cutting machine comprising a feed table consisting of a plurality of spaced parallel fingers pivotted at one end, means adapted to be actuated to raise the free ends remote from the pivots, of all of said fingers to a maximum height, and means for locking selected ones of said fingers at the fully raised position whereby actuation of said raising means in the reverse direction serves to lower the remaining fingers to a lowered position.

3,679,118

POWDER CHARGE-OPERATED BOLT SETTER FOR SECURING EXOTHERMIC PLATES ON CHILL MOLDS

Elmar Maier, Feldkirch-tisis, and Herbert Rangger, Frastanz, both of Austria, assignors to Hilti Aktiengesellschaft, Schann, Fuerstentum, Liechtenstein

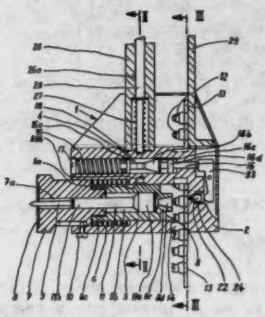
Filed July 13, 1970, Ser. No. 54,365

Claims priority, application Germany, July 18, 1969, P 19 36 740.9

Int. Cl. B25c *1/14*

U.S. Cl. 227—10 9 Claims

A powder charge-operated bolt setter is formed with a reduced axial length for effectively securing exothermic plates on chill molds. In the casing of the bolt setter a percussion pin and a barrel are arranged in spaced parallel relationship and a lever situated within the casing to be pivoted by the percussion pin against a firing pin aligned with the rear end of the barrel



for exploding cartridges held in a magazine which is guided in a stepwise manner through the casing. A release bar extends perpendicularly from the casing and is arranged in operating relationship with the percussion pin so that the firing action can be initiated at a position remote from the casing.

3,679,119

INJECTION MOULDED PLASTIC CUP-LIKE ARTICLE

Keith Philip Copping, 24 Brian Cliff Drive, Don Mills, Ontario, Canada

Continuation-in-part of Ser. No. 759,845, Sept. 16, 1968, abandoned. This application June 1, 1970, Ser. No. 42,413

Int. Cl. B65d *3/06*

U.S. Cl. 229—1.5 9 Claims

The disclosure sets forth an injection moulded cup-like plastic article characterized by point of injection and a moulding terminus and having as a major structural element thereof a wall embodying superposed ribs defining a cross-lattice network dividing the wall into segmental rectangular web portions entirely bounded by the ribs, the ribs being directed at an angle to a theoretical line of shortest distance between the injection point and the moulding terminus.

3,679,120

PRE-WRAPPED BOX

Marion Sturm Rubin, 69 W. 95th St., Brooklyn, N.Y.

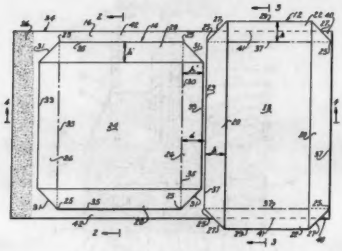
Filed Nov. 26, 1969, Ser. No. 879,991

Int. Cl. B65d *65/12*

U.S. Cl. 229—23 BT 4 Claims

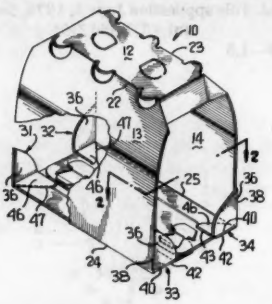
A pre-wrapped gift box comprises a decorative wrapping sheet and first and second box sections operatively attached to the wrapping sheet. The box sections are positioned on the sheet in registration with and adjacent each other and are spaced apart a distance which enables one box section to receive the other box section without buckling or otherwise

adversely affecting the smooth surface of the wrapping sheet upon the swinging of the sections toward each other. The box sections may be provided with diagonal fold lines so located as to enable each of the walls of the box sections to be folded



downwardly toward the wrapping sheet. With this structure the assembly is readily formed into a compact flattened package adapted for shipping and storage. Preferably the box sections are rectangular in shape and are composed of a stiff but collapsible material such as paperboard.

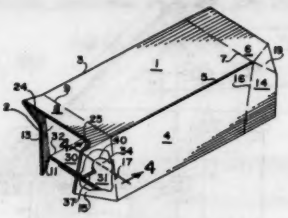
3,679,121
CARTON WITH GUSSETTED ENDS
Nicholas V. Morgese, Garnerville, N.Y., assignor to Continental Can Company, Inc., New York, N.Y.
Filed July 17, 1970, Ser. No. 55,642
Int. Cl. B65d *75/08*
U.S. Cl. 229—40 **12 Claims**



This disclosure relates to a carton blank and a carton formed therefrom which includes top, side and bottom panels with the side panels each including an end panel joined thereto along a fold line whereupon being set up into a generally tubular configuration the end panels at least partially close axially opposite ends of the carton. The major feature of the invention is a locking panel associated with each bottom and end panel in the form of a pair of locking panel portions divided by a fold line which permits the locking panel to be folded or gussetted interiorly of the tubular body to maintain each end panel disposed generally 90° relative to its associated side panel.

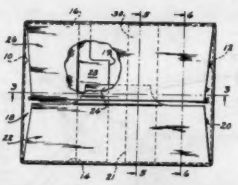
3,679,122
CARTON HAVING COMPOSITE BOTTOM
Robert G. Neff, Cincinnati, Ohio, assignor to The Mead Corporation
Filed Nov. 18, 1970, Ser. No. 90,568
Int. Cl. B65d *5/02*
U.S. Cl. 229—40 **2 Claims**

A carton having top, bottom and side walls as well as end panels foldably joined to the end edges of the top wall is provided with a composite bottom panel including a pair of panels respectively adjoined foldably to the bottom edges of the side walls together with a plurality of projections extending from an edge of one of the bottom panels and arranged to be in-



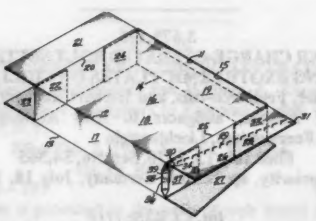
serted into corresponding openings formed in a retaining panel foldably joined to an edge of the other bottom panel and secured in flat face contacting relation with a surface of the one panel.

3,679,123
CARTON WITH COMPOSITE END WALL
Robert E. Wood, Ashland, Ohio, assignor to The A. L. Garber Company, Ashland, Ohio
Filed Feb. 2, 1971, Ser. No. 111,865
Int. Cl. B65d *5/64*
U.S. Cl. 229—43 **1 Claim**



A means of forming or embossing the end-flaps of a fiberboard carton so that the mutually engaging surfaces of the several flaps are parallel to each other, and therefor define closely contacting surfaces when the carton is sealed. This relationship assures that the adhesive applied to the flaps will uniformly contact the surface of the opposed flap.

3,679,124
CONTAINER WITH OPENING FEATURE
Joseph F. Schillinger, Palos Hills, Ill., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed April 9, 1971, Ser. No. 132,850
Int. Cl. B65d *5/54*
U.S. Cl. 229—51 TS **11 Claims**



A container with a diagonal tear-line extending across one panel, allowing the entire end to be opened for ease of access

to the contents. The opening panel may be formed of overlapping panels, and the upper panel may have a lift-tab to allow the overlapped panels to be opened more easily. The free edges of the upper and lower end closure panels may be cut diagonally to allow nesting of the blank on the web.

3,679,125

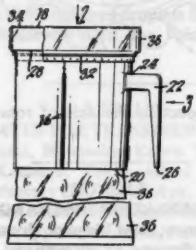
SANITARY BAG HOLDER

Ronald B. Forance, 7 Kathleen Rd., Hudson, Mass.; William F. Madden, 745 Pleasant St., Marlboro, Mass., and Clair H. Gaucher, 168 S. Central Ave., Ramsey, N.J.

Filed June 8, 1970, Ser. No. 44,376

Int. Cl. A47j *47/00*; B65d *33/02*

U.S. Cl. 229—55 **4 Claims**



A one-piece molded plastic tubular member open at both ends in triangular section and having a substantial diameter compared to the length thereof, a handle integral therewith said handle being shorter than the length of the member and being attached at one end only thereof at an apex of the member, in combination with a disposable plastic or paper bag, with means holding the bag mouth thereof open at one open edge of the member, the bag depending down through the member and beyond the other open edge thereof.

3,679,126

BAG STRUCTURES WITH INTEGRAL CLOSURE ARRANGEMENT

Connie Lake, Pittsford, N.Y., assignor to Mobil Oil Corporation

Continuation-in-part of Ser. No. 884,534, Dec. 12, 1969. This application May 26, 1970, Ser. No. 40,649

Int. Cl. B65d *33/16*

U.S. Cl. 229—62 **3 Claims**

To provide a closure for bags of flexible material such as polyethylene, light fabric, or the like, a restricted opening is formed near the top of the bag, for example molding an opening into a wall of the bag, by a seam partitioning off a portion of the mouth of the bag, a pair of seams extending towards a side with the side being slit open between the seams, or a pair of seams between which a slit is cut; or a tear-off strip, or loop can be formed on the bag. The size of the opening is just large enough to enable a user to gather together the remainder of the mouth of the bag an push it through the opening, the released gathered material then flaring out by its own elasticity to provide a closure which will securely hold contents within the bag. If the bag is made of stressed material, such as streched polyethylene, applying heat in the range of the melting temperature to to bag causes localized melting; release of stress results in the formation of a hole having reinforced surroundings of re-melted, unstressed material.

3,679,127

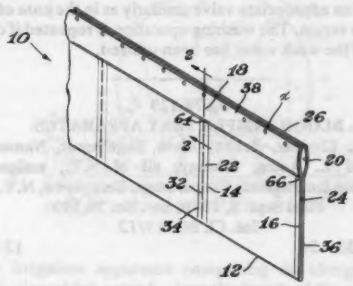
BAG DISPENSING ARRANGEMENT

James M. Stefancin, Parma, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 791,726, Jan. 16, 1969, abandoned. This application April 16, 1971, Ser. No. 134,860

Int. Cl. B65d *31/12, 31/14*

U.S. Cl. 229—62.5 **3 Claims**



An improved packaging system of the type wherein a bag including a loop across its top end is mounted, for filling, in a fashion comparable to a curtain and rod arrangement, and thereafter the loop parted to form a fill opening. The loop is formed by a plurality of spaced attachments extending edgewise across the top end of the bag. A loop so constructed can be efficiently parted by a gentle pulling action.

3,679,128

CENTRIFUGE

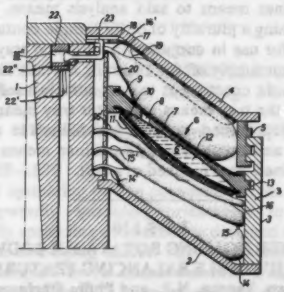
Hans Peter Olof Unger, Stockholm; Johan E. H. Westberg, Lidingo; Gunnar Ingemar Berndtsson, Stockholm, and Stephen Lars Schwartz, Lidingo, all of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

Filed Aug. 6, 1970, Ser. No. 61,583

Claims priority, application Sweden, Aug. 11, 1969, 11121/69

Int. Cl. B04b *11/00*

U.S. Cl. 233—20 R **6 Claims**



A centrifuge comprises a rotating chamber containing a compressible container for the liquid to be centrifuged. The centrifuge also includes means to compress the container to transfer liquid from the container during centrifugation. The compressing means is also capable of compressing one or more further compressible containers to transfer liquid

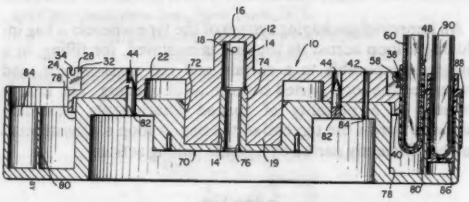
therefrom to the first-mentioned compressible container. The compressing means is preferably a diaphragm member which is urged by centrifugal force against a compressible container. In one application, the container is filled with blood to be centrifuged and, after the serum is separated, a valve is opened permitting the diaphragm to compress the container to transfer the serum to a further container. The valve is then closed and speed reduced until the diaphragm returns to its rest position causing compression of a still further container provided with wash water. A valve is then opened to permit transfer of some or all of the wash water into the first-mentioned container and the device may then be braked to cause the water to mix with the blood cells therein. The washed blood cells are then centrifuged and the water transferred to the water container or yet a still further container by the actuation of an appropriate valve similarly as in the case of transferring the serum. The washing operation is repeated if desired until all of the wash water has been utilized.

3,679,129

BLOOD SAMPLE TRAY APPARATUS

Stanley L. Livshitz, Bronx; Alvin Engelhardt, Nanuet, and Stanford L. Adler, Monsey, all of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,199
Int. Cl. B04b 9/12
U.S. Cl. 233—26 **13 Claims**



New and improved sample processing and supply apparatus are disclosed and comprise tray means from which are pivotally supported a plurality of partially filled sample container means. In use, said tray means are operatively connected to centrifuge drive means and rotated to centrifuge each of said samples and separate the same into sample constituent layers, whereupon said tray means are removed as a unit from said centrifuge drive means and operatively associated with automatic sample analysis means for indexing to supply a series of one of said sample constituents from said sample container means to said analysis means. Outer tray means comprising a plurality of outer sample container means are provided for use in conjunction with said tray means for the concomitant supply of, for example, a whole sample and a separated sample constituent to said sample analysis means. For such use, the tray means and outer tray means are combined in predetermined manner which insures ample container means and outer sample container means alignment, and the combined trays indexed as a unit.

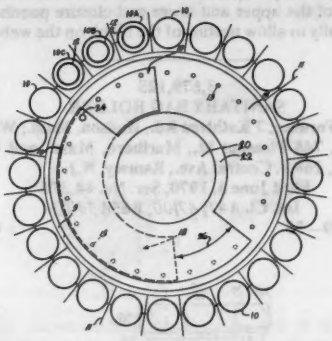
3,679,130

CONTAINER HOLDING ROTATABLE BODY WITH ADJUSTABLE BALANCING FEATURE

Robert A. Mayo, Verona, N.J., and Philip Ohringer, Dix Hills, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,352
Int. Cl. B04b 9/12
U.S. Cl. 233—26 **6 Claims**

An imbalance of a centrifuge of the type used for a number of separate sample containers is compensated by means of two overlapping semi-circular sector balancing weights, which are



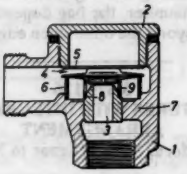
adjustable with respect to the axis of rotation of the centrifuge.

3,679,131

CONDENSATION DISCHARGER

Gerhard Hohn, Bremen; Josef Lingnau, Bremen-Borgfeld, and Wulf Rettemeier, Bremen, all of Germany, assignors to Gestra KSB Vertriebsgesellschaft mbH & Co., Bremen, Germany

Filed April 6, 1970, Ser. No. 25,724
Int. Cl. F16t 1/10
U.S. Cl. 236—59 **3 Claims**



A device for discharging condensation has a flat thermic actuating member filled with evaporating liquid and having a diaphragm with a centrally located closing device co-operating with the corresponding valve seat. The invention is particularly characterized in that the diaphragm is held tightly between two rigid plate-like wall parts, whereby one of the wall parts along with the diaphragm forms the receiving space for the liquid, while the other wall part supported upon the valve seat sleeve serves as a holder for the actuating member.

3,679,132

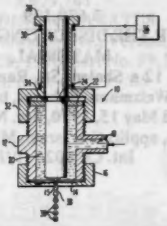
JET STREAM VIBRATORY ATOMIZING DEVICE

Dennis A. Vehe, Mineral Wells, Tex.; Jay G. Porterfield, and Lawrence O. Roth, both of Stillwater, Okla., assignors to Cotton, Incorporated, New York, N.Y.

Filed Jan. 21, 1970, Ser. No. 4,595
Int. Cl. B05b 17/04
U.S. Cl. 239—4 **4 Claims**

In a jet stream vibratory atomizing device including a nozzle body and a nozzle head attached to the nozzle body, a selectively variable constant pressure source of fluid is connected into the nozzle body such that fluid may be force through an opening or openings fashioned in the nozzle head. A volumetric displacement member is positioned to contact the fluid within the nozzle body near the head. High rate cyclic

disturbances are transmitted from the volumetric displacement member through the fluid downstream of the openings in the head to induce a uniform formation of droplets in the fluid



stream wherein the number of droplets formed corresponds to the rate of displacement of the volumetric displacement member.

3,679,133
APPARATUS FOR TRANSPIRING PERFUME

Masaaki Sekiguchi, Hiratsuka; Kaoru Yoshikawa, Fujisawa, and Akira Komatsu, Tokyo, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

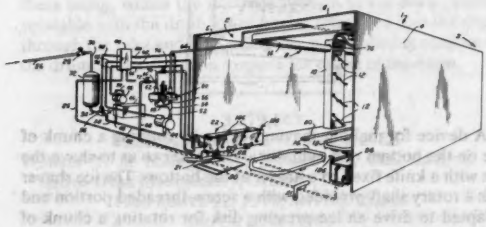
Filed Sept. 4, 1970, Ser. No. 69,783
Claims priority, application Japan, June 30, 1970, 45/65215
Int. Cl. A24f *25/00*; A61l *9/04*
U.S. Cl. 239—34 6 Claims

Apparatus for transpiring perfume includes a container having a pressurized liquid perfume therein, an adjustable valve which is sealed onto the container, a flexible pipe for passing the liquid perfume to the adjustable valve, and a porous member for transpiring the liquid perfume.

3,679,134
WHEEL WASHING DEVICE

Charles D. Nixon, 1411 Wysong Drive, McKinney, Tex.

Filed Nov. 9, 1970, Ser. No. 87,787
Int. Cl. B05b *15/06*
U.S. Cl. 239—70 11 Claims

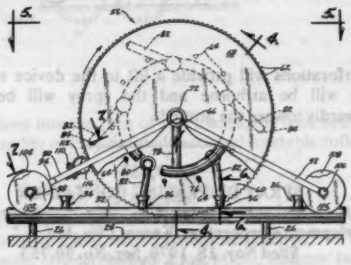


A vehicle washing device comprising wheel washing spray nozzles positioned at each side of the entrance of a wash bay in combination with a timer controlled valve adapted to divert all wash water from the vehicle washing apparatus to the wheel washing nozzles for a predetermined period of time and then back to the vehicle washing apparatus.

3,679,135
IRRIGATION APPARATUS

Gottlieb W. Grosch, Silver Creek, Nebr.

Filed Jan. 25, 1971, Ser. No. 109,370
Int. Cl. B05b *3/00*
U.S. Cl. 239—183 7 Claims



An irrigation apparatus comprising an elongated water supply pipe which extends along the length of the area to be irrigated and which is in communication with a source of water under pressure. The supply pipe has a plurality of spaced apart water discharge valves provided thereon along the length thereof which are normally closed but which are adapted to permit the flow of water from the supply pipe therethrough upon being opened. A water actuator means is movably mounted on the supply pipe along the length thereof and has means thereon to successively open and close the discharge valves along the supply pipe. The valve actuator means has at least one sprinkler pipe means extending therefrom which is transversely disposed with respect to the water supply pipe. The sprinkler pipe means has a plurality of sprinkler means along the length thereof which are in fluid communication with the water supply pipe when the actuator means successively opens the discharge valve. The apparatus includes power means for propelling the actuator means along the water supply pipe to successively actuate the water discharge valves so that the sprinkler pipe means will have a constant and continuous supply of water furnished thereto as the actuator means moves along the length of the water supply pipe. The sprinkler pipe means is preferably supported by a plurality of spaced apart self-propelled water towers which have the sprinkling means provided thereon.

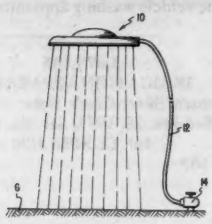
3,679,136
CONVERTIBLE WATER SPRINKLING DEVICE

Gary L. Snyder, Olde Forge East Bldg. 37 Apt 9-B, Morristown, N.J.

Filed Nov. 19, 1970, Ser. No. 90,913
Int. Cl. B05b *3/00*
U.S. Cl. 239—188 4 Claims

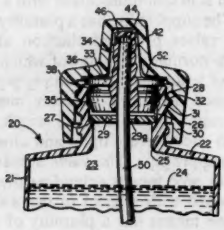
A water sprinkling device convertible from a ground supported upwardly sprinkling orientation to an airborne downwardly sprinkling orientation is designed to simulate the appearance of a flying saucer. The device includes a central chamber adapted to be connected with a source of water supply, such as a hose. A plurality of water distribution tubes extend radially outwardly from the central chamber, with each such tube having perforations formed therein. Removable legs can be inserted into openings spaced about the periphery of the device. When the legs are inserted into the device and the perforations are directed upwardly, the device will rest upon the ground and will act as a conventional lawn sprinkler, issuing an upwardly directed spray. However, when the legs are

removed from the device and the device is inverted so that the perforations are directed downwardly, the water issuing from



the perforations will provide a lift to the device so that the device will be airborne and the spray will be directed downwardly toward the ground.

3,679,137
SPRAY DISPENSING CONTAINER
Paul A. Marchant, Kansas City, Mo., assignor to Ethyl Development Corporation, Kansas City, Mo.
Filed Nov. 18, 1970, Ser. No. 90,753
Int. Cl. B65d *1/32*
U.S. Cl. 239—327 **5 Claims**

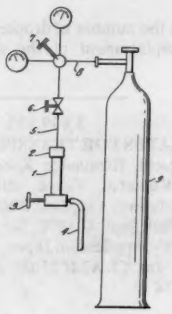


A spray-emitting squeeze bottle which includes a resilient, squeezable container having a hollow neck portion receiving a spray orifice plug and a check valve. A dip tube has its upper end received in an axial bore provided in the spray plug. Channels are provided in the inner wall defining the bore to supply air for the atomization of the bottle contents.

3,679,138
MULTI-PURPOSE WATERING EQUIPMENT
Eugene Bielle, 17 Route de Blanzet, 63 Cebazat Puy-de-Dome, France
Filed Dec. 23, 1970, Ser. No. 101,078
Claims priority, application France, Dec. 24, 1969, 6945031
Int. Cl. A01g *25/02*
U.S. Cl. 239—267 **8 Claims**

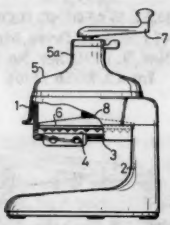
An assembly of elements constituting divisible and selective watering equipment which can be used along the edges of pathways, the assembly comprising a number of sectional elements of the same multi-bore cross-section assembled together, the number of elements being sufficient to give the required total length. By assembling the elements a continuous duct is formed right through the assembly, through which water is supplied, and in each section element is a branch duct equipped with sprinklers and discharge-regulating means to enable the water sprinkled from each sectional element to be regulated independently as a function of the requirements of the zone that it is watering.

3,679,139
PROCESS FOR THE DISRUPTING OF BIOLOGICAL MATERIAL
Amir Schneyour, 12 a Shalem St., Ramat-Gan, and Mordhay Avron, 9 Neve Weizmann, Rehovot, both of Israel
Filed May 15, 1970, Ser. No. 37,536
Claims priority, application Israel, May 21, 1969, 32,268
Int. Cl. B02c *19/12*
U.S. Cl. 241—2 **4 Claims**



The present invention relates to a process for the disruption of biological material and to a device for this process. The device according to the invention comprises in combination a pressure vessel provided with inlet and outlet means, pressure regulating means connecting the pressure vessel with a container of a compressed gaseous medium and means for determining the pressure established in the pressure vessel.

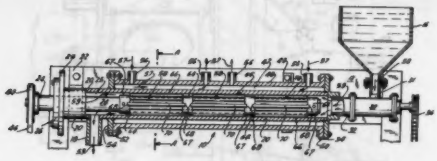
3,679,140
ICE SHAVER
Yoshiaki Kaishita, Nara, and Shigeo Sugimoto, Osaka, both of Japan, assignors to Tiger Vacuum Bottle Industrial Company, Limited, Osaka Prefecture, Japan
Filed July 9, 1970, Ser. No. 53,380
Claims priority, application Japan, July 10, 1969, 44/65613; July 21, 1969, 44/57856
Int. Cl. B02c *19/00*
U.S. Cl. 241—95 **5 Claims**



A device for making shavings of ice by rotating a chunk of ice on the bottom of a cylindrical container so as to shave the ice with a knife fixed to a holder at the bottom. The ice shaver has a rotary shaft provided with a screw-threaded portion and adapted to drive an ice pressing disk for rotating a chunk of ice in engagement therewith while pushing the disk downward, with a half nut being disposed in a rotary shaft supporting portion, and an operation lever for causing the half nut

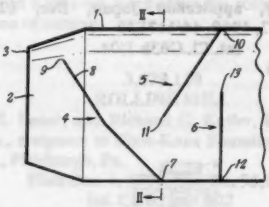
to engage with or disengage from the threaded portion of the rotary shaft.

3,679,141
GRINDING APPARATUS
Bertram W. Bristol, 71 Newman Ave., Verona, N.J.
Filed July 29, 1970, Ser. No. 59,115
Int. Cl. B02c *4/10, 15/08*
U.S. Cl. 241—106 **22 Claims**



A processing apparatus adapted to reduce the aggregate size of particles comprises a rotatable shaft concentrically mounted in a casing to form an annular channel in which the particles are received. A plurality of grinding rolls are disposed in said channel, at least one of said rolls being connected to the shaft for rotation therewith. Various sizes and arrangements of rolls are disclosed, all adapted to provide a shearing action on said particles upon rotation of said shaft relative to said casing.

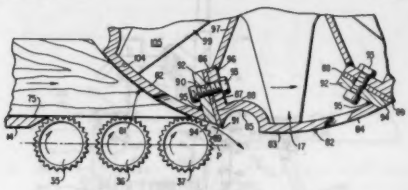
3,679,142
APPARATUS FOR TREATING REFUSE
Sydney Averill Gothard, Jersey, Guernsey (Channel Is.), assignor to Vickers Limited, London, England
Filed July 15, 1970, Ser. No. 55,051
Claims priority, application Great Britain, July 15, 1969, 35,670/69
Int. Cl. B02c *17/06*
U.S. Cl. 241—181 **7 Claims**



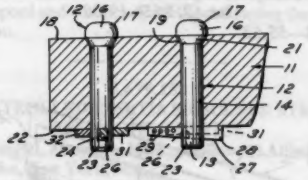
Apparatus for treating refuse comprising a drum rotatable about an axis that is horizontal or slightly inclined to the horizontal and having an inlet at one end and an outlet at the other end, and means within the drum for effecting a pulverizing action upon refuse fed into the drum; the curved wall of the drum being frusto-conical at the inlet end so as to taper inwardly in the direction towards the inlet from the outlet, and there being, within the inlet end portion of the drum, baffles rotatable with the drum for receiving refuse fed into the drum through the inlet and for feeding this refuse, during rotation of the drum, in the direction towards the outlet of the drum.

3,679,143
SHAVINGS MAKING MACHINES
William T. S. Montgomery, Jacksonville, Fla., assignor to Helene Irene Montgomery, Orlando, Fla.
Filed March 12, 1970, Ser. No. 18,828
Int. Cl. B02c *18/06*
U.S. Cl. 241—280 **6 Claims**

A shavings making machine comprises a rotating cutter drum having a plurality of longitudinally extending cutter blades on its periphery, and a moving feed bed for advancing pieces of wood to be converted into shavings under controlled feed conditions into the path of said blades, the feed bed comprising a plurality of longitudinally serrated rotatable rollers.



3,679,144
ROTATABLE PLATE AND IMPACT MEANS FOR A SCRAP FRAGMENTIZING MACHINE
David M. Bogle, Grosse Pointe Farms, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed March 1, 1971, Ser. No. 120,023
Int. Cl. B02c *13/28*
U.S. Cl. 241—300 **4 Claims**

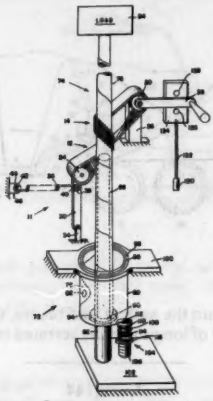


A rotatable plate and impact means for a scrap fragmentizing machine. The impact means comprises a stud including an enlarged head portion protruding from the scrap engaging surface of the plate and a shaft portion received within a bore formed in the plate. The head includes a portion countersunk into the surface of the plate to facilitate the transfer of impact forces from the head to the plate.

3,679,145
DEVICE FOR MOVING AN ELONGATED BODY IN THE DIRECTION OF ITS AXIS
Rene L. Guerster, Maple Glen, Pa., assignor to Ametek, Inc., New York, N.Y.
Filed June 3, 1970, Ser. No. 43,026
Int. Cl. B65h *75/00*
U.S. Cl. 242—54 R **3 Claims**

An endless belt is mounted on spaced drums with one reach of the belt being helically wrapped about an elongated body and with the other reach twisted through an angle of about 360°. Means are provided to rotate one of the drums. The device is shown cooperating with an elongated body in the form of a tapered rod and having takeup means to keep the belt taut. The device is also disclosed in cooperation with a screw operatively associated with a pair of nuts. Finally, the device is disclosed in cooperation with a tube comprising a helical axially extending ribbon of spring material which has

adjacent turns set to coil tightly in overlapping and telescoping engagement. In this embodiment the tube is mounted for storage in a rotatably mounted container, the movement of which is restricted by a damper.



3,679,146

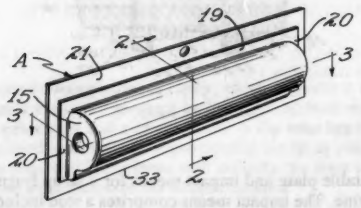
FILM DISPENSER

Loren J. Klitzke, Edina, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Feb. 17, 1971, Ser. No. 116,089

Int. Cl. B65h *19/00*

U.S. Cl. 242—55.53 **7 Claims**



An elongated dispenser body is formed of sheet plastic. The body is of proper size to accommodate a roll of film. The body includes an open rear which is encircled on one longitudinal side and both ends by coplanar flanges. A fourth flange on the other longitudinal side is offset slightly from said coplanar flanges. The three coplanar flanges are secured in face contact with a backing sheet. A space is provided between the backing sheet and the fourth flange through which film may be drawn.

3,679,147

INHERENT REWOUND FILM TRANSPORT SYSTEM

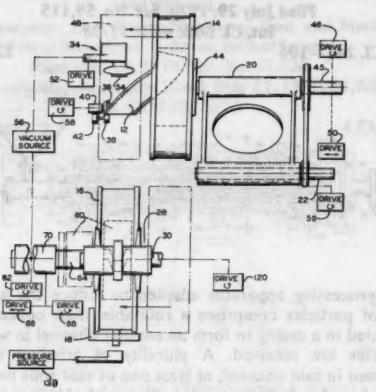
Raymond Edson Kittredge, Binghamton, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Sept. 18, 1970, Ser. No. 73,535

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.18 **8 Claims**

A system for unwinding a motion picture film from a payoff or unwind cassette through a projector and winding the film on a takeup cassette in such a manner that the film is inherently rewound, whereby the takeup cassette may be immediately used as the payoff cassette. The film is unwound from the center toward the outside of the payoff cassette, and is wound on a collapsable, removable core within a cassette which includes means for firmly holding and centering the outside of a completely wound coil of film. Also disclosed are means for automatically handling the film reels or cassettes from storage to payoff to windup positions and to automatically handle the leading end of the film to begin both threading into the projector and windup on the callapsable core.



3,679,148

LIGHT-INTERCEPTING MEANS IN A CAMERA CAPABLE OF COMBINATION WITH POWER DRIVEN FILM REWINDING MEANS

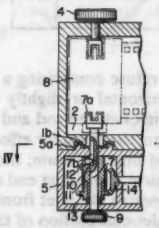
Kouichi Daitoku, and Shuji Kimura, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 8, 1970, Ser. No. 96,028

Claims priority, application Japan, Dec. 12, 1969, 44/117538; Dec. 12, 1969, 44/117539

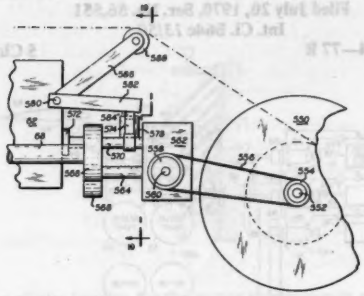
Int. Cl. G03b *1/04*

U.S. Cl. 242—71.6 **4 Claims**



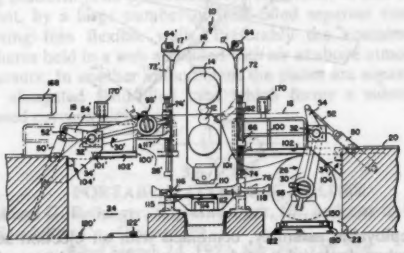
A camera has an aperture in a wall thereof opposite one end of a spool of a film magazine holding chamber, and a cover assembly in the aperture prevents light from entering the camera, the cover assembly being operable to open the aperture for reception of a detachable power-driven film rewinding assembly, the latter assembly also preventing entry of light into the camera when it is mounted on the camera, wherefor the camera can be used with or without the power-driven assembly and the film can be rewound by a manually operable rewind knob or automatically by the power-driven rewinding assembly.

3,679,149
TAKE-UP MECHANISM FOR PAPER STRIP
Gerald J. Ottavan, 585 Grand Ave., Ridgefield, N.J.
Division of Ser. No. 736,768, June 13, 1968, Pat. No. 3,567,148. This application June 15, 1970, Ser. No. 46,235
Int. Cl. B65h *23/20*
U.S. Cl. 242—75.5 3 Claims



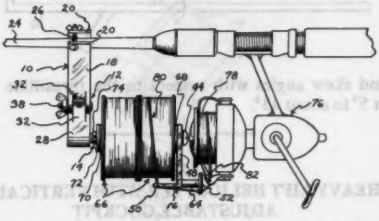
A printing press especially adapted for printing pressure sensitive adhesive-backed labels, comprising a novel paper feeding mechanism having means for maintaining constant tension including a self-adjusting brake and tension indicating means, a printing press head having two parallel ink feeds to permit the inking roller to move across the printing plate in either direction in order to ink the plate, a novel die stamp or die cut mechanism which assures a uniform application of cutting force over the entire peripheral edge of the label by virtue of a slightly resilient platen and a twin link arrangement for moving the movable die up and down, out of and into cutting relation with the label paper, a novel stripper having a slip clutch for driving a drum that pulls the unwanted material from the printed label at a substantially constant tension, a cutter of unique design not employing sheering for cutting the labels into longitudinal strips of a preselected integral number of labels and a take-up mechanism for rolling up the printed labels in lieu of cutting.

3,679,150
ROLLING MILL
Michael M. Feuer, and Richard G. Kotler, both of Allegheny City, Pa., assignors to Blaw-Knox Foundry & Mill Machinery, Inc., Pittsburgh, Pa.
Filed Dec. 4, 1970, Ser. No. 95,027
Int. Cl. B21c *47/02*
U.S. Cl. 242—78.1 18 Claims



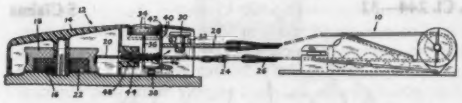
A coil rolling mill in which the supply coil and the finished coil are mounted on swing type reels which are moved to maintain the pass line, the spool for a used supply coil being transferred to the finished coil reel.

3,679,151
LINE TRANSFER APPARATUS
Harold D. Rice, 3404 W. 85th St., Leawood, Kans.
Filed June 1, 1970, Ser. No. 42,353
Int. Cl. A01k *89/00*
U.S. Cl. 242—85 14 Claims



A line transfer apparatus which includes a clamp mounting a shaft in substantial alignment with the axis of a spinning reel. The shaft carries a crank comprising a tube telescoped over the shaft and an arm extending radially therefrom. The arm has line guiding notches for lifting the line from a supply spool mounted on the tube as the arm, tube and supply reel are rotated as a unit on the shaft by the force exerted by the line on the arm during rotation of the reel line pick-up device. A friction brake yieldably resists relative rotation between the supply reel and the tube but permits such relative rotation responsive to tension in the line due to unequal diameters of the supply spool and stationary reel spool during the line winding operation.

3,679,152
CONTROLLED INERTIA SHOULDER STRAP RETRACTING DEVICE
Robert W. Stoffel, Ferndale, Mich., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Oct. 8, 1970, Ser. No. 79,098
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 12 Claims

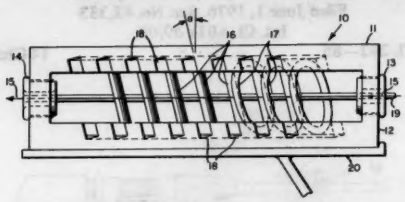


A motor vehicle shoulder strap retracting device for use with an inertia responsive belt element locking device. The retracting device relieves the vehicle occupant of the continuous retracting force heretofore applied by the shoulder strap to the occupant.

3,679,153
RING AND BAR TENSIONER
Ernest Lee Griggs, Jr., Chattanooga, and John David Porter, Hixson, both of Tenn., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 17, 1969, Ser. No. 885,854
Int. Cl. B65h *59/34*
U.S. Cl. 242—153 4 Claims

A tensioning apparatus that includes a housing through which a threadline passes in a straight path. The housing con-

tains a plurality of rings suspendable from the threadline and maintains these rings for free movement in a plane oriented at



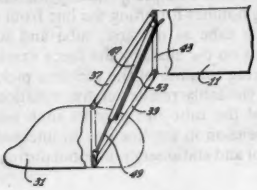
tilt and skew angles with respect to the threadline of from about 5° to about 45°.

3,679,154

HEAVY LIFT HELICOPTER WITH VERTICALLY ADJUSTABLE COCKPIT

John B. Nichols, and Roger L. Gamaunt, both of Manhattan Beach, Calif., assignors to Hughes Tool Co., Aircraft Division, Culver City, Calif.

Filed July 21, 1970, Ser. No. 56,932
Int. Cl. B64c *27/04*
U.S. Cl. 244—17.11 **8 Claims**



A helicopter for use in transporting large loads and having a cockpit movably connected to the main body fuselage by a parallelogram linkage which may be actuated by the pilot and/or load operator for increasing visibility when loading the helicopter and providing easy access to its interior.

3,679,155

BALLOON AND PARACHUTE COMBINATION

Armando P. Centofanti, 2812 Newbern Circle, Youngstown, Ohio

Filed Aug. 28, 1970, Ser. No. 67,834
Int. Cl. B64b *1/48*
U.S. Cl. 244—32 **5 Claims**

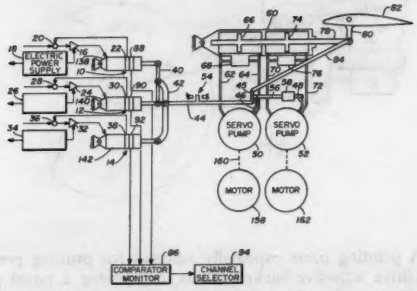
A balloon and parachute combination wherein the parachute is positioned over and around the balloon with the space therebetween being progressively smaller from the sides of the balloon and parachute to the top of the balloon and parachute.

3,679,156

FLY-BY-WIRE

William G. Redmond, Jr., Dallas, Tex., assignor to LTV Electrosystems, Inc., Greenville, Tex.

Filed July 20, 1970, Ser. No. 56,551
Int. Cl. B64c *13/50*
U.S. Cl. 244—77 R **5 Claims**



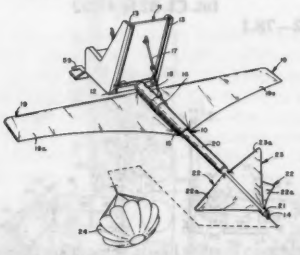
Three separately generated electrical control signals are applied to respective electromechanical transducers in a power actuator control system. Each electromechanical transducer generates a mechanical output motion related to the applied control signal and independent of the remaining transducers. A mechanical linkage arrangement coupled to the outputs of each of the three electromechanical transducers combines the motions into a single mechanical movement. This single mechanical movement positions the control element for a servo-pump supplying a power actuator.

3,679,157

AIRCREW RECOVERY SYSTEM

Richard A. Roberts, Corona, and John R. Jones, Palos Verdes Peninsula, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 16, 1970, Ser. No. 81,353
Int. Cl. B64d *25/10*
U.S. Cl. 244—141 **16 Claims**

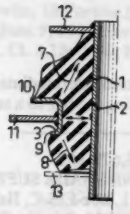


A deployable assembly, combined with an ejection seat, which when deployed by a drogue chute forms a lifting platform controllable by the crew member in the ejection seat. The assembly is deployed after parent aircraft abort from a collapsed configuration behind the seat and includes two wing lifting surfaces, a tail boom carrying a deployable empennage and a damper unit for selective conversion of the drogue chute drag into relative deployment sequence of the boom, empennage and the wings.

3,679,158
ELASTIC BEARING FOR MOTOR SUSPENSION OF MOTOR VEHICLES

Dietrich Pusch, Resse, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Continuation of Ser. No. 780,537, Dec. 2, 1968, abandoned.
This application Nov. 23, 1970, Ser. No. 92,253
Int. Cl. F16f 15/00
U.S. Cl. 248—10 2 Claims

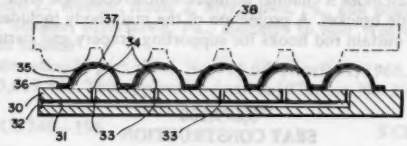


An elastic bearing for the motor suspension in motor vehicles having an inner sleeve and a radially spaced outer sleeve with a preloaded rubber body therebetween, in which said outer sleeve has a radially extending flange engaged by a first bead portion of said rubber body which first portion tapers away from said flange, said rubber body also having a second tapered portion adjacent said first tapered portion and tapering to a greater extent than said first tapered portion but tapering in the same direction as the latter.

3,679,159
VIBRATION ISOLATION STRUCTURE

Bert Bach, 270 West End Avenue, New York, N.Y., and Eliot S. Gerber, 7 Frog Rock Road, Armonk, N.Y.

Filed Feb. 9, 1971, Ser. No. 114,009
Int. Cl. F16f 15/08
U.S. Cl. 248—22 5 Claims



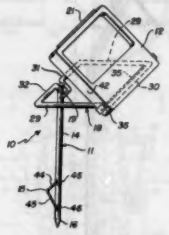
A structure to reduce vibration consists of a rigid bottom plate and a rigid top plate which may act as a vibration reducing platform. The plates are kept separated, in one embodiment, by a large number of fluid-filled separate containers having thin flexible walls. Preferably the containers are spheres held in a web and filled with air at above atmospheric pressure. In another embodiment the plates are separated by an elongated fluid-filled tube which forms a substantially closed curve in plan view.

3,679,160
PORTABLE LITTER BAG HOLDER

William G. Ballenger, Highland Park, Ill., assignor to Central Specialties Co., Chicago, Ill.

Filed March 24, 1971, Ser. No. 127,729
Int. Cl. B65d 67/00
U.S. Cl. 248—9 10 Claims

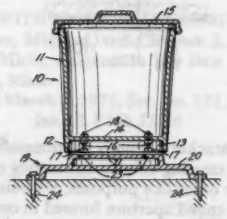
A portable litter bag holder is disclosed which is formed out of bent tubular material. The folding frame has a support stake with a right triangular foot piece secured thereto for pressing the same into the ground by standing on it. A rectangular bag frame is pivotally mounted to the support stake and a plastic bag of the typical 5 to 7 gallon plastic household variety has its upper edges folded around the bag frame, and is secured in place by a cover which is pivotally mounted to the bag frame along the edge opposite to the pivotal mount of the support stake to the bag frame. Stops are provided on the cover as well as the bag frame to insure the proper relationship of the parts when in operation, and yet permit the unit to be folded into a flat configuration.



3,679,161
GARBAGE CONTAINER AND ANCHORING BASE

Liborius F. Husting, 109 E. Sixth St., Hastings, Minn.

Filed July 10, 1970, Ser. No. 53,930
Int. Cl. A47g 23/02
U.S. Cl. 248—154 4 Claims



A stabilized garbage can is provided which is mounted to a base member by means of projecting headed studs that interlock with arcuate slot members. An adapter and anchoring base is also provided which permits the invention to be used with a previously owned garbage can.

3,679,162
GARBAGE CAN LID HOLDING DEVICE

Maurice N. Burley, 1305 S. 5th St., Omaha, Nebr.

Filed Aug. 19, 1970, Ser. No. 65,142
Int. Cl. A45f 3/44
U.S. Cl. 248—156 2 Claims

A holder for garbage can lids. This holder includes an arcuate shaped frame carrying parallel cross members to which are

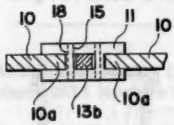
secured a pair of arms which are held by a spring to the arcuate frame. The outer ends of the arm portions are secured to a spring clamp for holding the lid.

3,679,163

STEERING COLUMN MOUNTING BRACKET ASSEMBLY

George J. Smith, Alma, Mich., assignor to Lobdell-Emery Manufacturing Co.

Filed March 6, 1969, Ser. No. 804,820
Int. Cl. B62d *1/18*
U.S. Cl. 248—223 8 Claims



A break-away bracket assembly for releasably mounting an axially extending steering column to steering column support structure, and for other like purposes, wherein a first bracket part has an open ended aperture formed in one edge thereof. A second bracket part has an opening through which a securing member such as a bolt may extend and is mountable on the first bracket part. One of the bracket parts has an axially extending projection and the other bracket part has a socket receiving the projection which defines a retaining edge surface normally preventing separation of the projection from the socket but which may be stripped away under application of a predetermined axial separating force.

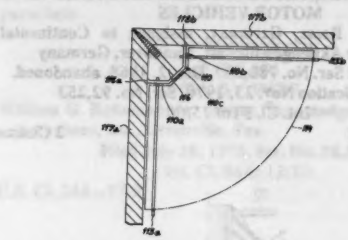
3,679,164

SHELF-SUPPORTING STANDARD

Martin Bard, 953 45th St., Brooklyn, N.Y.

Division of Ser. No. 649,627, June 28, 1967, Pat. No. 3,502,293. This application March 5, 1970, Ser. No. 26,452
Int. Cl. A47f *5/04, 5/10*
U.S. Cl. 248—243 3 Claims

Standard comprising an upright tubular bar of polygonal cross-section having vertical slits in at least two nonadjoining faces to receive shelf-carrying brackets extending in different directions, a possibly unslitted intermediate face having holes to receive screws for fastening the bar to a supporting wall.

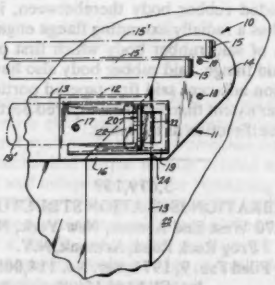


3,679,165

CURTAIN AND SHADE SUPPORT

Johnson L. Duncan, Route 1, Box 125-C, Helenwood, Tenn.

Filed June 19, 1970, Ser. No. 27,493
Int. Cl. A47h *1/12*
U.S. Cl. 248—256 5 Claims



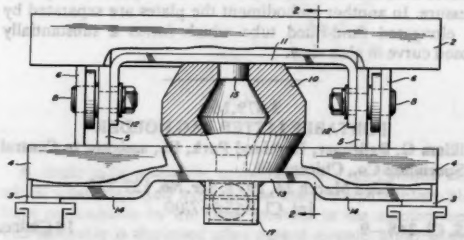
A decorative device for attachment to window molding. This device is for the purpose of supporting curtain rods, drapery rods and a window shade. The main body of the device includes a channel member which receives a removable shade bracket. A projection of the main body includes a pair of curtain rod hooks for supporting drapery and curtain rods.

3,679,166

SEAT CONSTRUCTION

Klaus Sturhan, Lemgo/Lippe, Germany; assignor to Firm Gebr Isringhausen, Lemgo/Lippe, Germany

Filed Feb. 5, 1970, Ser. No. 8,765
Claims priority, application Germany, Feb. 13, 1969, G 69 05 646.8
Int. Cl. F16m *13/00*
U.S. Cl. 248—399 11 Claims



An upper support is upwardly spaced above a lower support and connected with the latter so as to be moveable

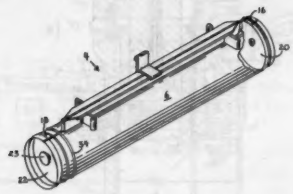
downwardly toward and away from the lower support. A hollow elongated elastomeric spring is arranged below and in engagement with the upper support, with its longitudinal axis in upward position so that the spring is elastically compressible in direction of its longitudinal axis when the upper support moves in direction towards the lower support.

3,679,167

DEVICE FOR FORMING HAMBURGER PATTIES

Bernard Jupiter, 184 Albermarle Ave., Levittown, N.Y., and Harry D. Kazakowitz, 18 Fortree Lane, East Meadow, N.Y.

Filed June 9, 1970, Ser. No. 44,763
Int. Cl. A22c 7/00; B29c 1/00
U.S. Cl. 249—173 2 Claims



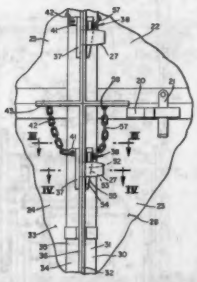
Device for forming hamburger patties, comprising an elongated container of resilient material. The container has a longitudin slit defined by a pair of flanges bent outwardly. Clamping means for locking the edge portions in intimate engagement are provided. A pair of removable closure disks for the ends of the container are received in outwardly extending shoulders formed at the ends of the container. One of the shoulders is of rectangular cross-section, to permit the axial displacement of one of the closure disks, when ground meat is frozen in the container. The frozen meat piece is removed from the container and is sliced transversely into hamburger patties of desired thickness.

3,679,168

CLAMPING DEVICE

Richard L. Weaver, Route 2, Myerstown, Pa., and Benjamin K. Smoker, Myerstown, Pa., assignors to said Weaver by said Smoker

Continuation-in-part of Ser. No. 720,687, April 11, 1968, Pat. No. 3,619,431. This application April 8, 1970, Ser. No. 26,490
Int. Cl. E04g 9/00
U.S. Cl. 249—196 5 Claims



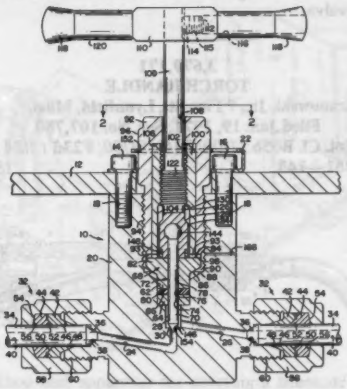
A clamping device is provided, that is specifically designed for clamping together plates or other members that have flanges connected thereto and bent out of the planes of the plates, with the clamping device having one member adapted to be inserted through holes of flanges, up close to the plates, and having another pin adapted to engage within the first member, up close to the plates that are being secured together.

3,679,169

HIGH PRESSURE VALVE AND METHOD

Alfred Bedo, Walton Hills, and Edward Beck, Cleveland Heights, both of Ohio, assignors to Sno-Trik Company, Solon, Ohio

Filed Oct. 1, 1969, Ser. No. 862,804
Int. Cl. F16k 25/00
U.S. Cl. 251—88 7 Claims



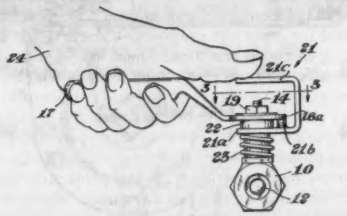
A high pressure valve employing a nonrotating needle. The valve actuating stem is threadedly received in a liner sleeve of the valve packing nut. The inner end of the actuating stem is bifurcated and includes a transverse cylindrical bore intersected by an axially directed slot somewhat smaller in breadth than the diameter of the bore and extending to the inner end of the stem. A valve needle including an enlarged spherical outer end is adapted to be received in the bore and slot. Essentially line contact is provided between the bearing surfaces of the valve needle and of the actuating stem. Sealing and support for the valve needle are provided by the combination of a seal washer, sealing member and alignment bushing disposed in a counterbore of the valve body.

3,679,170

BALL VALVE WITH POSITIVE LOCKING MECHANISM

Richard J. Bernas, Midland, and Clarence J. Kaczynski, Auburn, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed March 8, 1971, Ser. No. 121,756
Int. Cl. F16k 35/06
U.S. Cl. 251—104 4 Claims



The lock mechanism described herein is adapted for installation on a conventional ball valve. Basically, the mechanism comprises a U-shaped member, with the lower leg of the member having a hole therein and an upstanding stud positioned next to the hole. The lower leg of the U-member fits over the valve stem housing below the valve handle and is slidable up and down on the stem housing. In this position, both the upper and lower legs of the U-member are generally horizontal to the valve body, and the upper leg lies above the valve stem, which fits in the housing. A coil spring on the valve stem housing below the lower leg exerts a continuous upward

force against the lower leg. The lower leg is spaced a short distance below the handle by a washer positioned on the stem housing between the handle and the lower leg. When the valve is in a closed position, the upward force of the spring on the lower leg keeps the stud at a height such that it will engage an ear member on the handle and thus positively lock the valve in a closed position. The valve can be opened by pressing forward on the upper leg of the U-member, which disengages the stud from the lower leg and allows the handle to be rotated to open the valve.

3,679,171

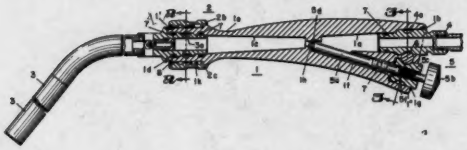
TORCH HANDLE

Frank Baranowski, Jr., 7 Pine St., Lynnfield, Mass.

Filed Jan. 19, 1971, Ser. No. 107,780

Int. Cl. B05b *11/00*; F16k *51/00*; F23d *13/24*

U.S. Cl. 251—148 **15 Claims**



A torch handle shaped to best fit into a man's hand, and to be readily manipulated, is made-up of a handle body which receives three inserts, i.e., the torch, a fitting for connecting the handle body to a supply of gas under pressure, and a valve insert, the latter enclosing an acute angle with the inlet passageway and the outlet passageway defined by the handle body, and the cross-sectional area of the latter progressively increasing from its torch end to the end thereof opposite its torch end.

3,679,172

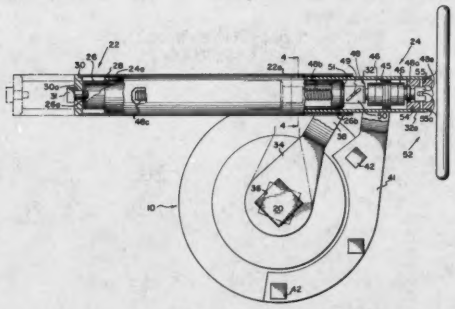
VALVE ACTUATOR ASSEMBLY

La Vern H. Kerkau, 387 River Rd., Lagoon Beach, Bay City, Mich.

Filed March 15, 1971, Ser. No. 124,021

Int. Cl. F16k *31/50*

U.S. Cl. 251—229 **10 Claims**



For use with a valve having a hollow valve housing supporting a rotatable valve stem, a valve actuator including telescoping tubular members respectively connected to the valve stem and the valve housing and providing a substantially dirt-free enclosure, and cooperating screw and nut members received within said enclosure and reactable between said tubular members to relatively move said tubular members and turn said valve stem relative to the housing to selectively prevent and permit the flow of fluid through the valve housing.

3,679,173

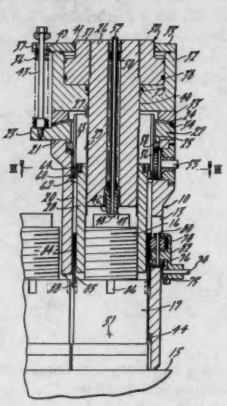
SELF-ALIGNING TENSIONER

Ronald E. Sherrick, and John C. Singleton, both of Lancaster, Ohio, assignors to Diamond Power Specialty Corporation, Lancaster, Ohio

Filed Aug. 6, 1970, Ser. No. 61,619

Int. Cl. B25b *21/00*

U.S. Cl. 254—29 A **12 Claims**



A hydraulic tensioner for preloading threaded studs or bolts has a cylinder and piston assembly at the top with a spherically concaved bottom surface overlying a matching spherically convex top surface of the supporting pedestal. Said assembly is held spaced above the pedestal by counterbalancing springs when the tensioner is unloaded but is pulled down to engage said surfaces when the tensioner is loaded. Said assembly and the drawbar, engagement nut and related components are angularly movable.

3,679,174

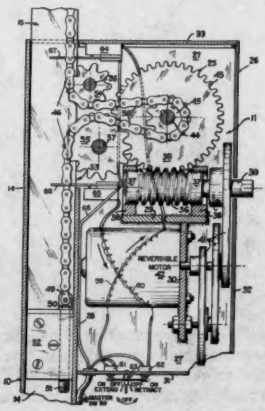
JACK OR LIFT MECHANISM AND DRIVE THEREFOR

Richard W. Boettcher, 18483 Ravenwood Drive, Saratoga, Calif.

Filed Feb. 10, 1971, Ser. No. 114,196

Int. Cl. B66f *7/26*

U.S. Cl. 254—45 **10 Claims**



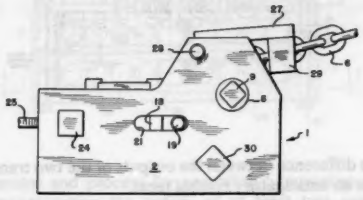
An extendable-retractable member telescopically guided for movement in a guide track having drive means affixed

thereto and operatively associated with flexible linkage having its ends secured to the opposite ends of the member for extending and/or retracting the latter relative to the guide track.

3,679,175
ENERGY ABSORBING TIE-DOWN WINCH

Walker E. Drayton, York, Pa., assignor to American Chain & Cable Company, Inc., New York, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,078
Int. Cl. B66f *1/00*; A63b *61/04*
U.S. Cl. 254—51 10 Claims

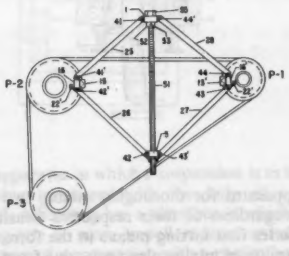


A tie-down winch for securing to the carrier deck of transporting vehicles loads which offer little frictional resistance to changes in the relative velocity between the load and vehicle. The winch is provided with an energy absorbing component which acts to compensate for any difference in velocity of the two objects in a manner eliminating shock loads. Changes in the energy of the system are transmitted to the energy absorber by linkage means.

3,679,176
BELT TIGHTENING TOOL

William W. Campbell, 271 Claywell Drive, San Antonio, Tex.

Filed Nov. 23, 1970, Ser. No. 91,771
Int. Cl. F16g *11/12*; B66f *3/36*
U.S. Cl. 254—54 1 Claim

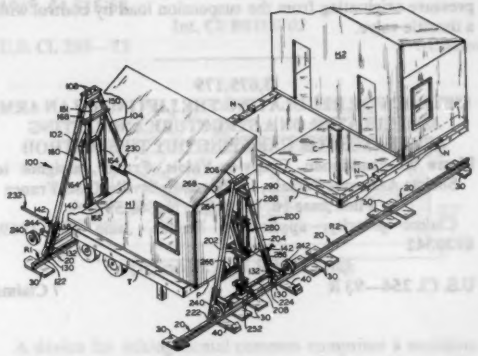


A belt tightening tool for adjusting the tension in the belt of a belt and pulley drive assembly having an adjustably mounted pulley consisting of a pair of pulley saddles for bearing against the grooves of opposite pulleys of the drive assembly. A screw bar adjusting assembly is operatively connected through pivotally connected connecting links to the pulley saddles for expanding and contracting the interval between the pulley saddles relative to each other along a common axis and for locking the pulley saddles in position relative to each other along the common axis.

3,679,177
METHOD AND APPARATUS FOR SETTING A PREFABRICATED BUILDING SECTION

Donald T. Scholz, Toledo, Ohio, assignor to Scholz Homes, Inc., Toledo, Ohio

Filed April 14, 1970, Ser. No. 28,415
Int. Cl. B66f *7/12*
U.S. Cl. 254—89 R 16 Claims

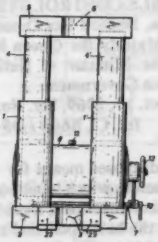


A method and apparatus for erecting a home or building from prefabricated building sections wherein a prefabricated house or building section is transported on a carrier over a highway to a building site alongside a foundation, and removing the prefabricated building section from the transporting carrier and setting it onto the permanent foundation by means of a pair of substantially vertically positionable A-frame hoists rollable on parallel tracks made from portable interfitting sections which extend from along the ends of the carrier to along and closely adjacent the ends of the foundation. Each of these A-frame hoists have means for engaging opposite ends of the house or building section and lifting it from the carrier, moving it along the tracks to the foundation and setting it down thereon. The house section engaging means of one of the A-frames is freely suspended from the apex thereof by a hoist means, and the engaging means of the other A-frame is vertically movable along a vertical bar suspended from the apex of its A-frame, the lower end of which bar is guided, restricted, and transversely movable in its pendular movement relative to the A-frame.

3,679,178
APPARATUS FOR SETTING OF RODS FOR DEEP WELL INSTALLATIONS

Emil Lodynski, Modling, Austria, assignor to Firma Friedrich Leutert, Luneburg, Germany

Filed Feb. 18, 1970, Ser. No. 12,307
Claims priority, application Austria, Feb. 21, 1969, A 1750/69
Int. Cl. B66f *3/24*
U.S. Cl. 254—93 R 6 Claims



An apparatus for setting the suspension means of deep well pump installations during operation, which comprises a pump-

ing rod. Two clamping means, including an upper clamping means and a lower clamping means, are operable on the polishing rod during the pumping operation. A suspension rail is operatively connected with the pumping rod, and a hydraulic cylinder with a piston reciprocates therein and is insertable between the upper clamping means and the suspension rail. A receiver container is adapted to feed a liquid medium under low pressure sufficient for lifting of the unloaded pistons and returns the liquid medium from the cylinder caused by the pressure originating from the suspension load by control with a throttle valve.

3,679,179

METHOD FOR REGULATING THE LIFTING OF AN ARM ARTICULATED ON A STRUCTURE AND LIFTING APPARATUS FOR CARRYING OUT THIS METHOD

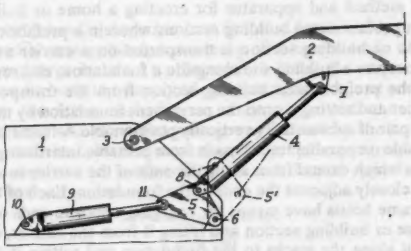
Pierre A. Praddaude, Crepy-en-Valois, France, assignor to Societe Anonyme Poclain, Le Plessis-Belleville, Oise, France

Filed June 16, 1970, Ser. No. 46,592

Claims priority, application France, June 18, 1969, 6920342

Int. Cl. B66f 3/26; B66c 23/54

U.S. Cl. 254—93 R **7 Claims**



This invention relates to a method of regulation for lifting, at the maximum possible speed, an arm articulated on a resistant structure, by means of a jack fed with pressurized fluid, without the power consumed exceeding a displayed value, wherein the position of at least one of the axes of articulation of the jack is servo-controlled to the value of the supply pressure of said jack. The invention also relates to lifting apparatus applying the above method, constituted by an arm articulated on a structure, by a jack coupled between the arm and an element whose position is adjustable with respect to the structure, and by a member for controlling the position of said element, wherein the control member is controlled by the feed pressure of the jack.

3,679,180

CABLE CONTROL SYSTEM

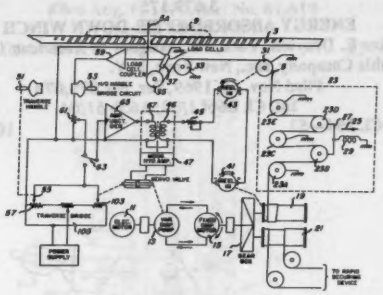
Joseph C. Callaghan, Dollard Des Ormeau, Quebec, Canada, assignor to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence of Her Majesty's Canadian Government

Filed Oct. 17, 1969, Ser. No. 867,322

Int. Cl. B66d 1/48

U.S. Cl. 254—172 **7 Claims**

This application discloses means for maintaining a desired tension in a cable used to winch a helicopter down to the deck of a ship. In the system described, a cable accumulator is used interposed between the helicopter and a constant tension haul down winch. This cable accumulator stores a variable amount of cable to provide a snatch-absorbing facility. In a control system for the winch, the tension in the cable is sensed and utilized, but in addition two transducers measure the cable velocity respectively on opposite sides of the cable accumulator. The difference between the outputs of the two transducers provides an anticipatory control term.



3,679,181

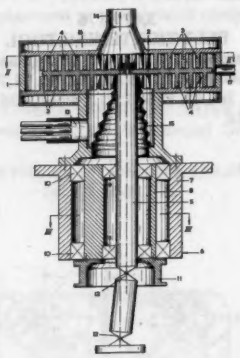
MIXING APPARATUS

Van Rij Coenraad, Sinnigvelderstraat 621, Weesp, Netherlands

Filed April 14, 1971, Ser. No. 133,837

Int. Cl. B01f 7/00

U.S. Cl. 259—5 **10 Claims**



Mixing apparatus for thoroughly mixing two or more ingredients irregardless of their respective densities. The apparatus includes first mixing means in the form of a housing having a plurality of mixing pins projecting from its inner surface and second mixing means in the form of a circular disk also having a plurality of mixing pins projecting from its respective surfaces. The disk is positioned within the housing and operatively aligned therein such that the respecting mixing pins projecting therefrom are intersticially disposed in a cooperating relationship with respect to the mixing pins projecting from the housing. The apparatus further includes an eccentric drive for moving at least one of the mixing means relative to the other mixing means such that the respective pins projecting from the moved mixing means orbit about the corresponding pins projecting from the stationary mixing means so as to define respective closed paths.

3,679,182

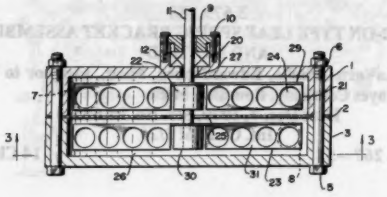
PROCESS SUITABLE FOR PREPARING HOMOGENEOUS EMULSIONS

Edwin T. Clocker, St. Paul, Minn., assignor to Ashland Oil, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 798,393, Feb. 11, 1969, abandoned. This application June 5, 1970, Ser. No. 43,730

Int. Cl. B01f 7/04, 5/16

U.S. Cl. 259—9 10 Claims



Apparatus and process for preparing homogeneous emulsions incorporating the action of at least two centrifugal pumps with the driving force of two of the pumps tending to pull material in the opposite direction from the other.

3,679,183

MIXING APPARATUS

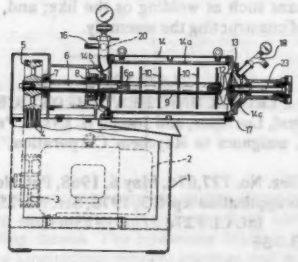
Willy A. Bachofen, Utengasse 15, Basel, Switzerland

Filed April 14, 1971, Ser. No. 133,974

Claims priority, application Switzerland, March 1, 1970, 2960/70

Int. Cl. B01f 7/04

U.S. Cl. 259—9 12 Claims



A mixing apparatus in which a suspension is to be subjected to a dispersing treatment with the help of a particulate dispersing aid. A housing has a chamber in which a rotatable shaft carrying one or more impellers is mounted to thereby agitate a mixture of a suspension with a particulate dispersing aid which has been admitted into the chamber. Outlet means for the treated suspension is provided and comprises an annular member having a center opening which communicates with the exterior of the chamber and a cooperating disc member which overlies the center opening and defines with the annular member an annular radial gap communicating with the center opening and so dimensioned that the treated suspension can pass therethrough but that the particulate dispersing aid is retained. The disc member is so mounted that it can turn or rotate with reference to the annular member but is completely independent of the rotatable shaft or any other drive means, that is it rotates freely.

3,679,184

MIXING DEVICES

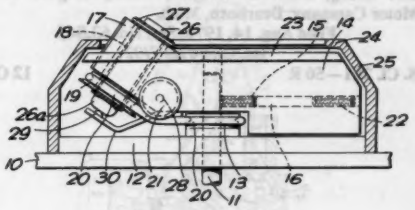
Cecil Halliday Woodham, deceased, late of Tuckaway, Warren Drive, Kingswood, Surrey, England, and Lloyds Bank Limited, executor and trustee of the estate

Filed Jan. 12, 1970, Ser. No. 2,169

Claims priority, application Great Britain, Jan. 14, 1969, 2,137/69; Feb. 17, 1969, 8,573/69; April 3, 1969, 17,724/69; Sept. 11, 1969, 44,896/69; Oct. 17, 1969, 51,216/69; Nov. 6, 1969, 54,515/69

Int. Cl. B01f 9/02

U.S. Cl. 259—72 7 Claims



A device for mixing dental cements comprises a structure mounted for rotation about a first axis, a motor for rotating the structure about that axis, a receptacle for the substance to be mixed mounted on the structure at a location spaced from the axis of rotation thereof and rotatable relative to the structure about a second axis inclined at an angle of less than 90° to the first axis, a transmission being provided to rotate the receptacle relative to the structure as the structure rotates. The receptacle receives a capsule comprising a main body having at least two compartments for the substances to be mixed, the compartments being separated by a dividing wall which is ruptured when required to permit the flow of a substance from one compartment to the other. Said one compartment also has an external rupturable wall so that the dividing wall may be ruptured by passing a piercing instrument first through the external wall and then through the dividing wall.

3,679,185

CARBURETOR SYSTEM HAVING A FLUIDIC PROPORTIONAL AMPLIFIER

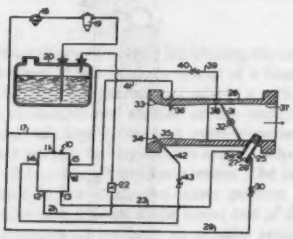
Giancarlo Nardi, Pisa, Italy, assignor to Compagnia Italiana Westinghouse Freni E Segnali, Torino, Italy

Filed Sept. 17, 1969, Ser. No. 858,652

Claims priority, application Italy, Oct. 18, 1968, 22441 A/68

Int. Cl. F02m 69/04

U.S. Cl. 261—36 A 3 Claims



A carburetor having a fluidic proportioning device adapted to deliver fuel to an air-intake conduit in proportion to air pressure differential established across the control ports of the fluidic device by regions of different pressures established within the venturi shape of the air-intake conduit and the variable position of a throttle valve, the fluidic proportioning

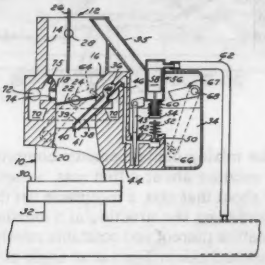
device including a first control port responsive to air pressure in an enlarged portion of the air-intake conduit, a second control port opposing the first control port and responsive to low air pressure in that portion of the air-intake conduit restricted by the throttle plate at low engine speeds and a third control port additively connected to the second control port and responsive to pressure within a narrow portion of the air-intake conduit.

3,679,186

SINGLE FUEL SYSTEM CARBURETOR HAVING IMPROVED METERING STABILITY

Laszlo Hideg, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 14, 1970, Ser. No. 63,843
Int. Cl. F02m 7/02
U.S. Cl. 261—50 R **12 Claims**



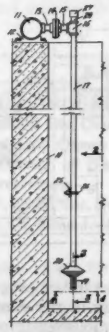
The nozzle supplying fuel to the metering chamber of a single fuel system carburetor has a guide member that extends toward the entrance to the fuel-air passage connecting the metering chamber with the carburetor induction passage downstream of the carburetor venturi. Both the nozzle and the guide member, which can be integral with the nozzle, preferably lie on the axis of the fuel-air passage. The intake manifold pressure signal and the pressure signal of the carburetor venturi are blended to establish a metering pressure in the metering chamber. The difference between that metering pressure and a reference pressure existing above the liquid fuel level in the float bowl serves as a metering signal for the liquid fuel.

3,679,187

AIR DIFFUSION APPARATUS FOR THE TREATMENT OF POLLUTED WATER

Mansel W. Smith, 1203 Dwyce Drive, Austin, Tex.

Filed June 3, 1970, Ser. No. 43,147
Int. Cl. B01f 3/04
U.S. Cl. 261—123 **3 Claims**



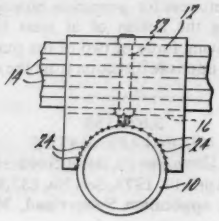
A plurality of substantially similar vertical air diffusion units suspended in spaced relation, and served by a common air supply manifold. Each unit embodying a vertical open-bottomed injection pipe extending downwardly and discharging into the tank liquor. The units being provided with individual orifice fittings which are preset so that the air discharging from all of the pipes will be distributed accordingly. The lower discharge extremities of the pipes, being vertically slotted, circumferentially distribute the discharging air and being provided with bubble deflectors above the slots to distribute and break up the coarse air bubbles arising from open slots. An elongated cleaning rod is provided for insertion down the injection pipes for the occasional removal of undesirable debris.

3,679,188

WELD-ON TYPE LEAF SPRING BRACKET ASSEMBLY AND METHOD

Terry LaVern Trindle, Edwardsburg, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Dec. 7, 1970, Ser. No. 95,605
Int. Cl. F16f 1/28
U.S. Cl. 267—52 **14 Claims**



A weld-on leaf spring bracket assembly comprising a leaf spring, bracket means for holding the leaf spring, and an axle to which the bracket means is welded, with the leaf spring being compressively secured within the bracket means by suitable means such as welding or the like; and, the method technique of constructing the assembly.

3,679,189

PYROTECHNIC HEATING DEVICE

Robert S. Deal, Los Altos, and Joseph H. Evans, Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 727,074, May 6, 1968, Pat. No. 3,551,223.
This application April 3, 1970, Ser. No. 25,558
Int. Cl. F27d 21/00; F23m 9/00
U.S. Cl. 263—50 **14 Claims**

A device for heating a heat recoverable article to its heat recovery temperature comprising a shield, one surface of said shield being in contact with or near the surface of a heat recoverable article and the other surface of said shield being covered with a material capable of liberating a predetermined amount of heat energy for a predetermined amount of time substantially uniformly over the surface of the heat recoverable article.

3,679,190

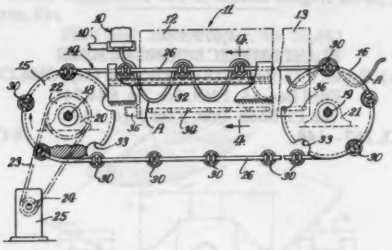
APPARATUS FOR HANDLING SHRINKABLE MATERIAL

James M. Fenner, Niles, Mich., assignor to National-Standard Company, Niles, Mich.

Continuation-in-part of Ser. No. 807,391, March 14, 1969, abandoned. This application Jan. 15, 1971, Ser. No. 106,714

Int. Cl. C21d 9/56

U.S. Cl. 266—3 R 11 Claims



Apparatus for conveying an elongated component, characterized by being shrinkable upon being heat treated, providing for the support and passage of the elongated component in a sinuous configuration to compensate for shrinkage upon heating, and for utilization of heating means of short length.

3,679,191

RUNNING CARRIAGE FOR A COORDINATE GAS CUTTING MACHINE

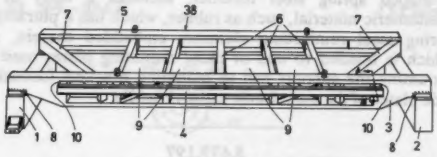
Erich Neander, Weisskirchen, Germany, assignor to Messer Griesheim GmbH, Frankfurt Main, Germany

Filed Aug. 28, 1970, Ser. No. 67,694

Claims priority, application Germany, Sept. 2, 1969, P 19 44 480.5

Int. Cl. B23k 5/22

U.S. Cl. 266—23 K 5 Claims



A longitudinally running carriage carries a transverse track for supporting and guiding a transverse drive carriage with torch supporting means. The transverse track is detachably fastened to the longitudinal running carriage and is adjustable in vertical and horizontal directions.

3,679,192

FURNACE TOP CHARGING DEVICES

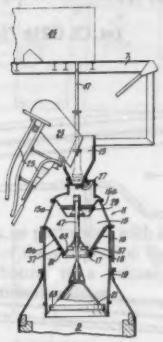
Russell A. Powell, Pittsburgh, Pa., assignor to Koppers Company, Inc.

Filed March 18, 1970, Ser. No. 20,650

Int. Cl. F27b 1/20

U.S. Cl. 266—27 9 Claims

An improvement in a bell and bell hopper top charging device for use with a blast furnace comprises a retaining surface that projects upwardly from a frusto-conical surface of the bell to form a pocket between the frusto-conical surface and the retaining surface. This pocket is filled with raw materials. Upon lowering the bell from the bell hopper to discharge the raw materials from the bell hopper, the raw materials flow over the retained material in the pocket and out of contact with the sealing surface of the bell. The improvement further comprises a supplemental sealing means that is mounted to the bell hopper for engagement with the sealing surface of the bell for maintaining a gastight seal between the bell and the bell hopper. The improvement also comprises a bell and a hopper that are constructed of a plurality of severable sections including two top sections and a unitary bottom section for the initial installation and two bottom sections for replacement members.



3,679,193

VALVE PACKING FOR METALLURGICAL SHAFT FURNACES

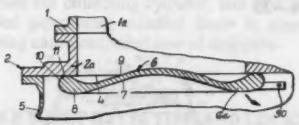
Pieter Hendrik Nieboer, Kapellen, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany

Filed June 11, 1970, Ser. No. 45,371

Claims priority, application Germany, Oct. 1, 1969, P 19 49 471.4

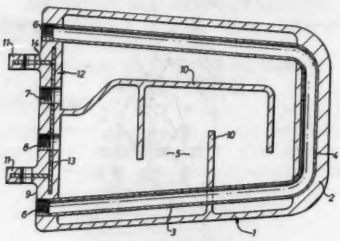
Int. Cl. F27b 1/20

U.S. Cl. 266—27 8 Claims



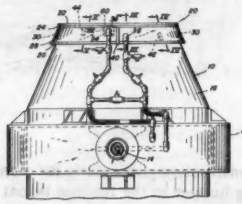
A valve construction particularly for closing the connection of a charging hopper to the furnace throat of a blast furnace comprises a valve seat for the hopper which is arranged in a recess portion or out of the stream of the material to be poured therefrom into the furnace. A valve closure member includes an inner portion having a cross section which makes it more flexible than an outer thicker portion. The outer sealing rim is formed in the thickened outer portion and it is rounded. The valve seat defined at the lower end of the charging hopper advantageously includes an annular groove which is connected to a source of gas under pressure and the groove is located over the rounded sealing rim of the valve member. Gas under pressure is directed to and through the groove and blows against the sealing rim of the valve member to provide the double function of preventing escape of gases from the furnace and cleaning the seat of the valve member for proper sealing purposes.

3,679,194
COOLERS
William Dyfrig Jones, Ty'R Bont, St. Mellons, Cardiff, Glamorgan, Wales, and Eric Peel, 5 Rockcliffe Terrace, Carlin How, Yorkshire, England
Filed Aug. 20, 1970, Ser. No. 65,427
Claims priority, application Great Britain, Aug. 20, 1969, 41,613/69
Int. Cl. C21b 7/10
U.S. Cl. 266—32 4 Claims



The invention provides a cooler for insertion in the lining of a furnace, for example for bosh or stack cooling in a blast furnace, and which mitigates against the effects of cooler failure by having nose and body portions with mutually isolated cooling water cavities, so that in the event of failure of the nose portion of the cooler, which is the portion most likely to fail in practice, the cooler can be kept in operation by the cooling water passing through the body portion alone. The nose portion cavity is fed with water through water passageways which extend through the body portion. Preferably the body portion cavity is provided with baffles which ensure that water passing therethrough travels into the vicinity of the nose portion.

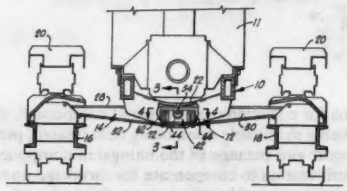
3,679,195
NOSE RING FOR METALLURGICAL PROCESSING VESSELS
Stanley M. Coulter, Wexford, and Ernst A. Mevissen, Robinson Township, Allegheny County, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.
Filed Aug. 21, 1970, Ser. No. 65,934
Int. Cl. C21c 5/42
U.S. Cl. 266—35 7 Claims



A ring structure for cooling the nose or mouth portion of a metallurgical processing vessel, such as a basic oxygen furnace. The ring is formed of radially outwardly extending upper and lower plate members secured to the shell of the vessel at the mouth or nose portion thereof. An outer face plate is fixed at its axial ends to the upper and lower plates and is spaced from the vessel whereby a continuous coolant receiving cavity is defined. Coolant inlet and outlet openings communicating with the cavity are provided. Baffle plates are disposed throughout the coolant cavity for assuring turbulent flow of coolant through the ring to thereby improve heat transfer between the shell and the coolant. An outlet chamber is arranged in communication with the coolant outlet with a portion of the chamber being above the plane of the cavity for assuring complete filling of the cavity with coolant and thereby eliminating the possibility of formation of gas pockets in the ring.

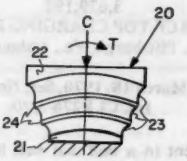
ERRATUM
For Class 267—52 see:
Patent No. 3,679,188

3,679,196
ELASTOMERIC SPRING BUMPER
Clady J. Royer, P.O. Box 75181, Oklahoma City, Okla.
Filed Dec. 15, 1969, Ser. No. 884,941
Int. Cl. B60k 7/00; F16f 3/10, 15/00
U.S. Cl. 267—140 8 Claims



An equalizer bar support pad structure for use in conjunction with frame supporting equalizer bars of the type used on tracked vehicles. The equalizer bar support pad structure includes a pair of tubular members secured to the upper central portion of the equalizer bar and projecting horizontally from opposite sides of the bar into the space defined between the legs of a pair of U-shaped spring metal members disposed on opposite sides of the bar, and each forming a portion of a support pad secured to the main frame support saddle. The support saddle is an arcuate member having a top plate which bears against the upper flange of the equalizer bar, but is not attached thereto. Each of the support pads, in addition to the U-shaped spring steel member, includes a body of an elastomeric material, such as rubber, which has a plurality of spring steel reinforcing elements embedded therein, and which is bonded to one or more mounting plates used for mounting the support pad to mounting brackets formed on side plates of the main frame support saddle.

3,679,197
COMPRESSIVE LOAD CARRYING BEARINGS
Warren E. Schmidt, Erie, Pa., assignor to Lord Corporation, Erie, Pa.
Filed May 27, 1971, Ser. No. 147,488
Int. Cl. B60g 11/22
U.S. Cl. 267—152 2 Claims



A compressive load carrying laminated bearing comprising alternating bonded layers of a resilient material and a non-extensible material generally concentrically disposed about a common center with successive layers being disposed at successively increasing radii. The fatigue life thereof, when subjected to cylic rotational or torsional motion about the com-

mon center, is substantially enhanced by progressively increasing the thickness of the layers of resilient material with increasing radii while simultaneously progressively decreasing the modulus of elasticity of the layers of resilient material with increasing radii.

3,679,198

PHOTOGRAPH MOUNTING JIG

John Henry Weggeland, 401 E. Leland Heights Blvd., Lehigh Acres, Fla.

Filed Sept. 29, 1970, Ser. No. 76,481
Int. Cl. B25b *3/00, 1/24;* **B23q** *3/18*
U.S. Cl. 269—3 **3 Claims**

A small jig device for use in laminatingly mounting a photograph or the like and in squaring the photograph with a backing card as the card and photograph are contact-adhesive-bonded together. The jig device includes right angular abutment surfaces adapted for engaging corresponding corner edge portions of the photograph and card items, and includes thin separator means arranged between corresponding corner portions of the card and photograph for providing finger-grip means operative in the initial stage of the photograph mounting procedure.

3,679,199

STRIP MATERIAL HOLDER

Ferdinand Christensen, 13207 Lomont Ave., Whittier, Calif.

Filed June 15, 1970, Ser. No. 46,396
Int. Cl. B65h *65/00, 75/28*
U.S. Cl. 269—254 R **13 Claims**

A material holder for engaging, holding and releasing strip materials is disclosed. The holder includes a housing having an elongated internal cavity and an aperture extending through one wall of the housing. A rotatable clamping member is positioned in the housing cavity. The clamping member is configured to allow the ready insertion or removal of strip material into or from the internal housing cavity in a first rotated position. In a second rotated position, the strip material is clamped to one edge of the housing aperture.

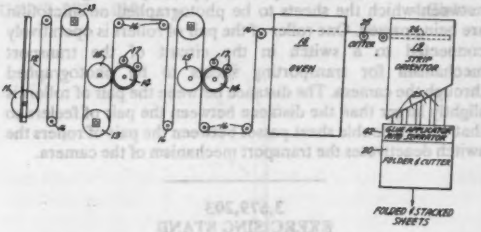
3,679,200

METHOD OF MAKING A MAGAZINE INSERT

Robert C. Bailey, Burnsville; Harry A. Estes, Edina; Glen S. James, Excelsior; James R. Klug, Minneapolis; Henry A. Montillon, St. Paul; Verne V. Myring, Minneapolis; Orville H. Robertson, West St. Paul; Blaine W. Sargeant, and Neal E. Sorensen, both of Minneapolis, all of Minn., assignors to Holden Industries, Inc., Minneapolis, Minn.

Filed Nov. 25, 1969, Ser. No. 879,850
Int. Cl. B41f *13/58*
U.S. Cl. 270—4 **7 Claims**

A machine for making a magazine insert which includes the combination of a printing press and a modification of a web-press jaw folder by the addition of glue applying nozzles located at the input side of the folding apparatus to apply adhesive to a ribbon to be folded in a predetermined manner. In addition, the ribbon may be perforated with the application of adhesive on either side of the perforation lines to provide an insert which may be bound to a primary magazine and removed said bound portion therefrom.

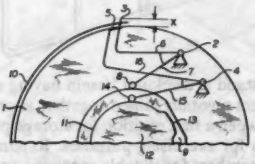


3,679,201

COLLECTING DEVICE ESPECIALLY FOR TRANSVERSE FOLDERS FOR WEB-FED ROTARY PRINTING PRESSES

Klaus Hertrich, Gohrenz, and Reiner Peters, Leipzig, both of Germany, assignors to VEB Polygraph Leipzig Kombinat Fur Polygraphische Maschinen und Ausrustungen, Leipzig, Germany

Filed Feb. 2, 1971, Ser. No. 111,879
Int. Cl. B65h *5/06*
U.S. Cl. 271—51 **6 Claims**



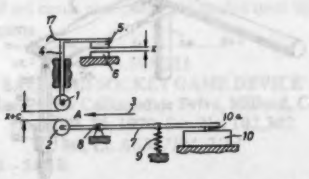
A collecting device, particular for cross folders of web-fed rotary printing presses in which the products are taken up by cam-controlled puncturing needles and are lifted off during the release from the collecting cylinder, and with each row of cam-controlled puncturing needles there is coordinated a counter-running cam-controlled row of strippers.

3,679,202

DOUBLE SHEET DETECTING AND LOCKING ARRANGEMENT

Walter Rauffer, Munich, Germany, assignor to AGFA-Gevaert A.G., Leverkusen, Germany

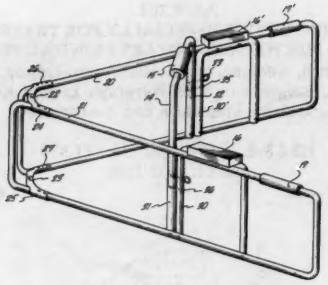
Filed Feb. 18, 1970, Ser. No. 12,304
Claims priority, application Germany, March 21, 1969, G 69 11 412
Int. Cl. B65h *7/06*
U.S. Cl. 271—57 **6 Claims**



An arrangement in a microfilm flow type camera for detecting the presence of a double sheet and for automatically deac-

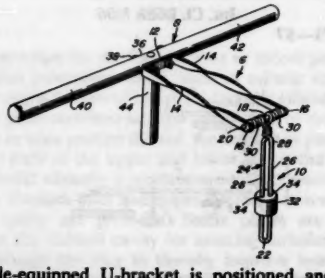
tivating the transport means for feeding sheets to be photographed on microfilm through the camera when a double sheet has been detected. The arrangement comprises a pair of oppositely arranged feelers between which a sample sheet can be inserted. One feeler of the pair of feelers is operatively connected to one roller of a pair of oppositely arranged rollers between which the sheets to be photographed on microfilm are being passed. One roller of the pair of rollers is operatively connected to a switch in the circuit of the transport mechanism for transporting sheets to be photographed through the camera. The distance between the pair of rollers is slightly larger than the distance between the pair of feelers so that when a double sheet passes between the pair of rollers the switch deactivates the transport mechanism of the camera.

3,679,203
EXERCISING STAND
Vito Grana, 15224 La Maida St., Sherman Oaks, Calif.
Filed Dec. 28, 1970, Ser. No. 101,496
Int. Cl. A63b *23/02*
U.S. Cl. 272—60 **11 Claims**



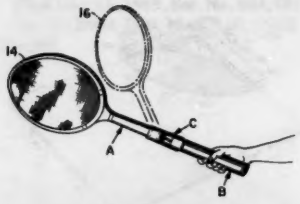
An exercising stand is disclosed herein having a pair of tubular side members pivotally joined together at one end so as to be pivoted between a first position for storage purposes and a second position for exercising purposes. Retainers are carried on the side members for slidably receiving an inverted U-shaped member constituting a back support extending between the side members when in their second position. Hand grips are carried on each of the side members adjacent the end opposite to the pivotally connected ends. A shoulder cushion is carried on each of the side members disposed between the back support and the hand grip.

3,679,204
WEIGHTED WHIRLING TYPE EXERCISING DEVICE
Samuel J. Busby, P.O. Box 74, Winlock, Wash.
Filed July 9, 1970, Ser. No. 53,456
Int. Cl. A63b *21/00, 21/20*
U.S. Cl. 272—81 **4 Claims**



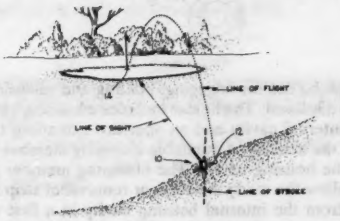
A handle-equipped U-bracket is positioned and braced against a selected body part (waist, knees, back, etc.). A uniquely weighted pendulous member is hinged on a terminally located shaft on an outer end of the U-bracket and is adapted to whirl through an orbital path after a suitable impetus is imparted and the desired momentum is achieved.

3,679,205
TENNIS RACKET FOR DEVELOPING TENNIS SWING
Eugene D. Finkle, 1100 Laurel, San Carlos, Calif., and James A. Patterson, 727 Viola Place, Los Altos, Calif.
Filed July 8, 1970, Ser. No. 53,152
Int. Cl. A63b *69/38*
U.S. Cl. 273—29 A **5 Claims**



A tennis racket is provided with a hinge intermediate the handle and racket head for providing hinged movement of the racket in the plane of the racket head. The hinge is preferably provided with a bias which tends to maintain the racket handle and head in a normal linear relation. When the racket is used to swing and hit the tennis ball so that the centrifugal momentum of the racket head propels the ball, the bias of the spring is not overcome and the racket handle and the head through the hinge are maintained in a normal linear relation. However, when the racket is used to push the tennis ball so that the racket head and handle is used as a lever to propel the ball, the bias of the spring is overcome and the racket handle and head fold at the hinge out of normal relation.

3,679,206
GOLFING AID
Howard G. Shambaugh, 830 Monroe St., River Forest, Ill.
Filed April 23, 1971, Ser. No. 136,717
Int. Cl. A63b *57/00, 69/36*
U.S. Cl. 273—32 R **5 Claims**

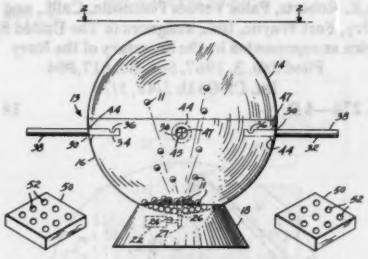


A device for aiding in the playing of the game of golf, particularly where playing on a sidehill such that the golf ball lies at a level above or below the golfer's feet. The device indicates the proper alignment of club and line of swing to compensate for the inclination of the sidehill. The device includes a base formed of pivotally connected members which define a first plane and a pointer element which extends upwardly from the base. When the pointer element is aligned along the line of sight from the ball to the point where the ball is to be hit, an indicator element positioned in the plane of the base lies parallel to the line of swing which will result in a line of flight of the ball along the above mentioned line of sight. The pointer element is adjustable to various marked positions which are functionally related to the lofts of the various club heads used in striking golf balls.

3,679,207
GOLF PUTTER CONSTRUCTION
Raymond J. Florian, 14440 Elwell, Belleville, Mich.
Continuation of Ser. No. 725,387, April 30, 1968. This application Aug. 3, 1970, Ser. No. 64,135
Int. Cl. A63b 53/00
U.S. Cl. 273—80 A 12 Claims

A golf putter for putting in a modified croquet style of putting comprising an elongated shaft having a substantially elongated grip portion at an upper end, and a putter head having a resilient striking face at a lower end. The putter head is of a predetermined weight which is counterbalanced by weighting means disposed in the upper end of the shaft to provide a weight balance point intermediate the ends of the shaft and proximate the lower extremity of the grip portion. The resilient striking face of the putter head may be formed by a slot located behind the face.

3,679,208
GAME APPARATUS FOR CATCHING RANDOMLY MOVING ARTICLES
Andrew J. Carrano, Jr., New Haven, Conn.; Stephen N. Cotsalas, Commack, and John E. Jacobson, Brooklyn, both of N.Y., assignors to Edu-Matic Designs, Ltd.
Filed July 20, 1970, Ser. No. 56,587
Int. Cl. A63b 71/04
U.S. Cl. 273—95 R 7 Claims

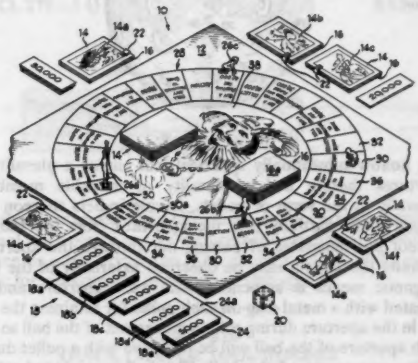


A game apparatus in which counter pieces are thrown violently upward in random directions from the bottom of an enclosure so as to bounce about inside the enclosure, and in which a catching device can be manipulated within the enclosure by a player to catch one or more counter pieces. The game may include a scoring board having individual places for counter pieces marked to match markings on certain counter pieces, so that a player attempts to catch pieces to place in a pattern on the board.

3,679,209
GAME CLUB
Charles W. Wexstaff, Ludington, Mich., assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.
Filed Oct. 7, 1969, Ser. No. 864,455
Int. Cl. A63b 71/00
U.S. Cl. 273—129 4 Claims

A game club for simulated golf type games, having two opposite heads on a common longitudinal medial shaft section, the two heads being crooked at substantially different acute angles relative to the longitudinal medial shaft section.

3,679,210
BOARD GAME APPARATUS
Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates
Filed Sept. 28, 1970, Ser. No. 75,953
Int. Cl. A63f 3/00
U.S. Cl. 273—134 C 7 Claims

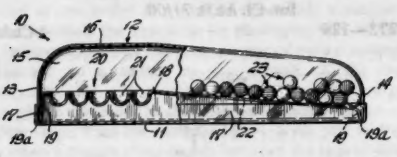


A game device of the type having a game board, playing pieces, and a chance device to determine the advance of the playing pieces, characterized by the provision of playing cards having simulated works of art thereon and other playing cards having value indicia thereon. The game board provides instructions for players as they advance therealong with respect to the purchase or sale of cards representing works of art. The value cards are selected at random and removably attached to the simulated works of art to establish a value therefor with the value of art cards remaining concealed until the termination of the game.

3,679,211
BALL AND SOCKET GAME DEVICE
Newell D. Hartley, 80 Collingsdale Drive, Milford, Conn.
Filed Dec. 29, 1970, Ser. No. 102,302
Int. Cl. A63f 7/04, 7/14
U.S. Cl. 273—144 B 1 Claim

There is disclosed an elongate box having a transparent top portion, and under the top portion a plate having a flat horizontal surface and a contiguous inclined flat surface, the

box containing a plurality of groups of colored balls resting on said plate, the balls of each group being of a color different from the balls of the other groups, the horizontal surface of the plate having five rows of hemispherical sockets to receive



some of the balls when the box is tilted to cause the balls resting on said inclined surface to roll over the horizontal socket-containing surface and after the box is tilted back to cause the balls not retained in the sockets to roll onto the inclined surface, the scoring being based on the number of rows of sockets containing the same color balls.

3,679,212

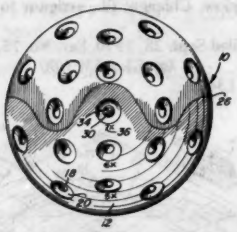
CHANCE READOUT EDUCATIONAL BALL

James A. Smith, 520 Hilda St., Morgan City, La.

Filed May 28, 1971, Ser. No. 147,777

Int. Cl. A63b *39/00*; A63f *5/04*

U.S. Cl. 273—144 B **8 Claims**



A hollow substantially spherical ball having a plurality of apertures therein and a plurality of movable members, generally in the form of pellets, having indicia thereon and shaped to fit partially into the apertures from the interior thereof but incapable of passing out through the apertures whereby the indicia may be observed externally of the ball. Magnetic means is associated with each aperture and associated with a metal ring on each pellet for retaining the pellets in the aperture during rolling movement of the ball so that each aperture of the ball will be provided with a pellet during rolling movement of the ball. The ball is provided with a weighted and flattened bottom surface so that it will come to rest in a predetermined position with indicia being provided on the external surface of the ball for association with the indicia revealed through the apertures for enabling various games to be played and enabling various educational processes to be practiced.

3,679,213

TRANSPARENT CONTAINER AND LETTERED CUBES PUZZLE

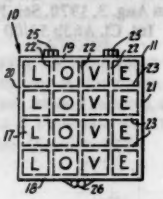
Vladimir Moss, 10463 Ambassador Drive, Rancho Cordova, Calif.

Filed Sept. 11, 1970, Ser. No. 71,606

Int. Cl. A63f *9/08*

U.S. Cl. 273—156 **1 Claim**

A puzzle game which includes a square box formed of transparent material with a cover which can be easily opened for access to the interior of the box. The box is divided into sixteen cubical compartments with four compartments along each side of the box. A cube is provided for fitting into each of the cubical compartments so that all surfaces of the cube not adjacent to the surface of another cube are visible through the transparent box. Each cube is provided with various combinations of individual letters taken from the word "love" with a single letter being visible on each face of the cube. The basic



color of the cubes is the same however the letters are printed in different colors so that not only the proper spelling of the word is required but also the correct color for the letters of the word.

3,679,214

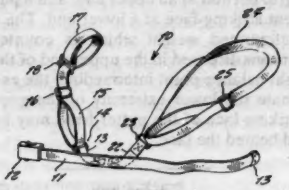
GOLF CLUB SWING TRAINING AID

Jack D. Boyte, 8837 Glenwood, Apt. #15, Overland Park, Kans.

Filed Jan. 12, 1971, Ser. No. 105,896

Int. Cl. A63b *69/36*

U.S. Cl. 273—189 R **1 Claim**



A training aid for a golf player and which is designed so to hold the right arm elbow of the student close to the body throughout the back swing, the device comprising a regulation canvas belt for being placed around the student's waist, a front cross belt section attached at one end to the regulation canvas belt, the other end of the front cross belt section having a loop that goes around the right arm of the player just above the elbow.

3,679,215

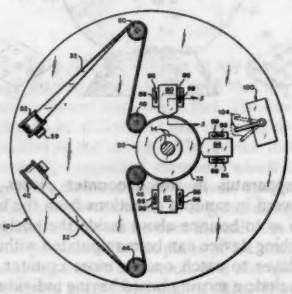
TAPE RECORDER

William E. Roberts, Palos Verdes Peninsula, Calif., and Gerald J. Barry, Fort Wayne, Ind., assignors to The United States of America as represented by the Secretary of the Navy

Filed Feb. 3, 1967, Ser. No. 617,004

Int. Cl. G11b *5/48, 5/78*

U.S. Cl. 274—4 D **14 Claims**



A tape recorder having a motor with a shaft, a pair of tape storage reels which are mounted rotatably on the shaft and are

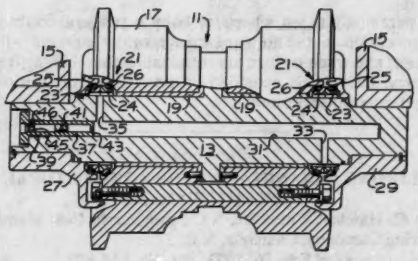
mechanically interconnected by constant torque springs, a tape drive capstan fixed to the shaft for withdrawing magnetic tape from either of the tape storage reels, and magnetic recording heads positioned immediately adjacent the grooved periphery of the capstan for erasing, recording, and reading recorded information on a plurality of tracks carried by the magnetic tape. Circuitry is provided to cause the recorder to continuously record data without rewinding at a low speed, the oldest recorded data being continuously erased during the recording of new data; and remotely actuatable apparatus is provided to cause the recorder to play back and transmit the recorded data at high speed in reverse sequence.

3,679,216

PRESSURE-BALANCED TRACK ROLLER

Floyd S. Dadds, Peoria, and James E. Gee, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed April 17, 1970, Ser. No. 29,439
Int. Cl. F16j *15/40, 15/16*
U.S. Cl. 277—3 **1 Claim**



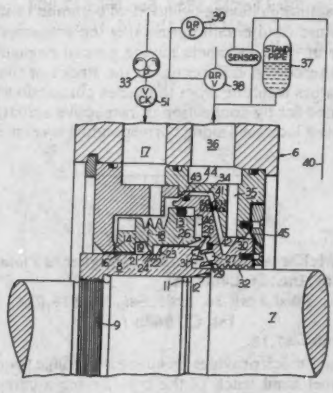
A pressure balanced track roller for underwater use includes a floating piston for transmitting ambient pressure to the lubricant chamber of a face seal to maintain adequate face loads on the seal rings when the track roller is operated at deep depths underwater.

3,679,217

AUTOMATIC SHUTDOWN SEAL

Gerald Lesiecki, Greendale, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Oct. 27, 1970, Ser. No. 84,297
Int. Cl. F16j *15/40*
U.S. Cl. 277—3 **1 Claim**



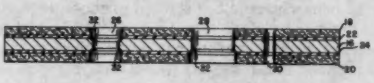
A rotary shaft seal is provided with a sealing fluid to seal a process fluid. A spring-biased mechanical shaft seal automatically closes and seals the process fluid from the atmosphere when the sealing fluid pressure is lost. During machine operation the pressure generated by the sealing fluid overcomes the force of the springs to open the mechanical seal.

3,679,218

UNITIZED VALVE PLATE, GASKETS AND THE LIKE

Robert G. Farnam, New Lisbon, Wis., assignor to F. D. Farnam Co.

Filed March 3, 1969, Ser. No. 803,535
Int. Cl. F16j *15/12*
U.S. Cl. 277—233 **6 Claims**



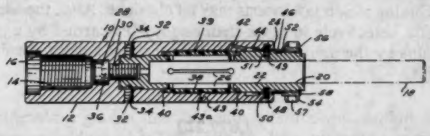
A unitized metal plate and gasket assembly in which a suitable gasket is firmly bonded to one or both sides of a metal plate with the unitized assembly having one or more die cut holes or apertures therethrough and with the unitized plate assembly being particularly suitable for use as a valve plate unit in automatic transmissions, but having other uses as well.

3,679,219

HYDRAULICALLY ACTUATED CHUCK

Gordon N. Cameron, 1322 Hampton Road, Grosse Pointe Woods, Mich.

Filed Feb. 20, 1970, Ser. No. 13,107
Int. Cl. B23b *31/30*
U.S. Cl. 279—1 Q **8 Claims**



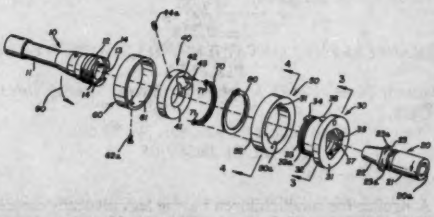
A sleeve actuated hydraulic chuck for accurately locating internal work pieces or tool elements for machining, grinding, gauging or other operations. The chuck is substantially symmetric for vibrationless operation at high speeds.

3,679,220

QUICK CHANGE TOOL HOLDER

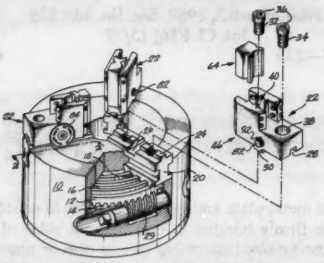
Harold C. Reeves, Akron, Ohio, assignor to Portage Machine Company, Akron, Ohio

Filed March 23, 1970, Ser. No. 21,834
Int. Cl. B23b *31/10*
U.S. Cl. 279—1 B **5 Claims**



In a tool holder adapted to be mounted in a spindle for rotational purposes and to releasably hold a tool adaptor the provision of a spring loaded impact ring movable relatively of the holder and its locking nut, whereby, by grasping the impact ring, the adaptor can be removed without halting the spindle.

3,679,221
CHUCK JAW INSERT AND ASSEMBLY
Alvin J. Behrens, 25325 117 Place S.E., Kent, Wash.
Filed June 11, 1970, Ser. No. 45,499
Int. Cl. B23b *31/10*
U.S. Cl. 279—1 SJ 6 Claims



A chuck for a turning machine or lathe, is disclosed having three jaws movable radially by a worm and scroll mechanism. The jaws illustrated are in the form of master and top jaws and an insert, formed of relatively soft material, is carried by each top jaw. Each insert is held in place by means disposed along its marginal edge portions. Wedge means are provided by an eccentrically mounted wheel so that a soft jaw insert is held without slack for machining of the surface to engage a work piece. Thus, the soft jaw insert surface is machined, while held in the same position it will be held during use, and prcision machining of soft jaw inserts may be obtained. Also, the use of inserts, selectively in more than one holder carried by a jaw, obtains by the mere cutting of the insert bar stock to desired lengths.

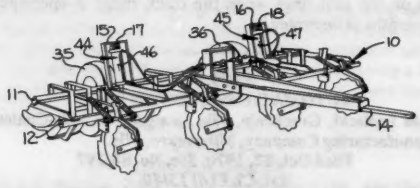
3,679,222
CHILD'S STROLLER
Alfonso Guillamon, 612 Columbus St., Salt Lake City, Utah
Filed Dec. 31, 1970, Ser. No. 103,053
Int. Cl. B62b *11/00*
U.S. Cl. 280—36 R 5 Claims

A stroller for small children having legs pivotally connectable to each other such that a collapsed, pole-like structure is obtained for storage when the stroller is not in use. Collapsible brace means are provided to secure the pivoted together legs in an extended position for use. One leg comprises a convenient handle member extending rearwardly of the carrier constructed to support the child.

3,679,223
PORTABLE BABY CARRIAGE
Koichi Sakai, 5457-1, Nishijimacho, Hamamatsu-shi, Japan
Filed Dec. 22, 1970, Ser. No. 100,707
Claims priority, application Japan, Dec. 24, 1969, 44/10335; Dec. 24, 1969, 44/121988; Dec. 24, 1969, 44/121989
Int. Cl. B62b *11/00*
U.S. Cl. 280—37 1 Claim

A perambulator on wheels or baby carriage according to this invention in the form of a rectangular suitcase with a backrest and wheels which are retractable, thus making it easy to carry, the wheels extended or retracted being positively locked in a proper position.

3,679,224
LIFTING ARRARGEMENT FOR AGRICULTURAL IMPLEMENT FRAME
John C. Hatcher, Charlotte, N.C., assignor to Cole Manufacturing Company, Charlotte, N.C.
Filed Feb. 16, 1971, Ser. No. 115,172
Int. Cl. B62d *21/18*
U.S. Cl. 280—43.23 3 Claims

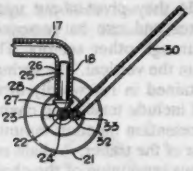


The frame of an agricultural implement is elevated relative to land traversed by the cooperation of first and second pressure fluid actuators having cylinders of common inside diameter, a pressure fluid circuit connecting the actuators in series, and a pair of lever members having ground engaging wheels mounted thereon. A differential in the stroke of the pressure fluid actuators resulting from the series connection thereof is compensated for by connection of respective actuators at different spaced locations along corresponding lever members.

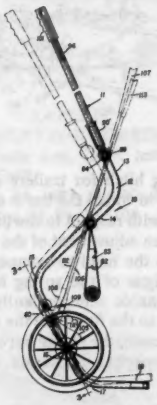
3,679,225
HAND TRUCK
Merle B. McKinney, St. Louis, Mo., assignor to Pioneer Liquor Company, Inc., St. Louis, Mo.
Filed April 24, 1969, Ser. No. 819,014
Int. Cl. B62b *1/12*
U.S. Cl. 280—47.18 3 Claims

This hand truck provides an adaptor carriage for converting a two-wheel hand truck of the type having a carrying frame supported by a pair of wheels at one end and including a pusher stem at the other end, into a four-wheel truck in one simple operation. The adaptor carriage includes an axle hav-

ing a ground wheel at each end, an adaptor unit mounted on the axle and an elongate pulling handle. The adaptor unit includes a sleeve having a pin transversely mounted thereon and interfitting the pusher stem in pivotal relation. The elongate handle is pivotally mounted to the adaptor unit.

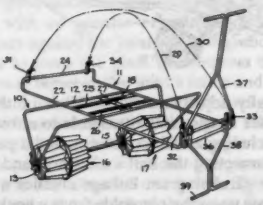


3,679,226
GOLF CLUB CARRIER OR CART
Thomas G. Bresser, 6216 Bona Vista Ave., Cincinnati, Ohio
Filed Oct. 14, 1969, Ser. No. 866,225
Int. Cl. B62b *1/14*
U.S. Cl. 280—47.19 **11 Claims**



The golf cart comprises a central body member with wheels at opposite sides thereof and with the axles and other supports carried by the central body member securing the golf clubs, without benefit of a bag, in operative position for ready selective movement for the removal of the clubs from the supporting portion of the two wheel cart or carrier.

3,679,227
UTILITY CART
Thomas Rock, 39 Woodland Ave., East Orange, N.J.
Filed July 30, 1970, Ser. No. 59,591
Int. Cl. B26b *1/12*
U.S. Cl. 280—47.24 **6 Claims**

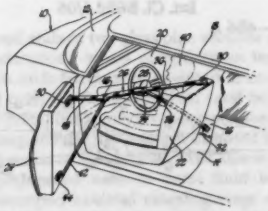


A utility cart of being hand-drawn over either soft or hard ground and of carrying loads of varying size and weight. The cart is composed of two distinct sections which may be dismantled when not in use to provide a more compact structure for storage or shipping purposes. The first or truck section is constituted by a frame having an axle carrying a pair of wheels, each wheel having a center tire which is flanked on either side by rollers having a paddle-wheel formation. The second section is constituted by a cradle which is supported on the truck frame, the cradle having both a handle and a rest pivoted on one end thereof.

3,679,228
RESTRAINT APPARATUS
Raymond J. Settimi, 23350 Los Encinos Way, Woodland Hills, Calif.
Division of Ser. No. 740,970, June 28, 1968, Pat. No. 3,550,875. This application Aug. 19, 1970, Ser. No. 64,993
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 SB **2 Claims**

A vehicle occupant restraint apparatus including a shoulder strap having a connector on the free end thereof adapted to be engaged with a floor-mounted connector so as to be positioned diagonally across the upper torso of an occupant, and being secured within a spring biased retraction device supported by an outer wall of the vehicle and a stowing clip also supported on the vehicle outer wall so that the shoulder strap may be stowed in an out-of-the-way position when not in use. There is also disclosed a spring biased retraction device in which a strap is wound around a reel and is put in position for use by protraction of the strap to the desired length and then allowing slight rewind or retraction of the strap whereupon the reel will be locked against further protraction or retraction.

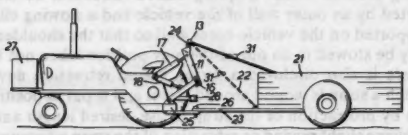
3,679,229
VEHICLE PASSIVE OCCUPANT RESTRAINING BELT ARRANGEMENT
Willem J. J. Weststrate, Washington, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 25, 1971, Ser. No. 118,604
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 SB **1 Claim**



A vehicle passive occupant restraining belt arrangement includes a first belt whose one end is fixed to the upper inboard

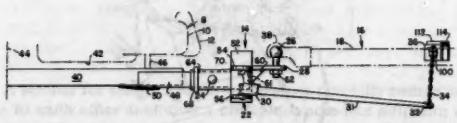
portion of a vehicle seat and whose other end is fixed adjacent the lower inboard portion of the seat, a first apertured member slidably receiving an intermediate portion of the first belt such that the first belt defines shoulder and lap belt portions, a second belt having one end fixed to the first apertured member and the other end received by a conventional inertia retractor mounted adjacent the lower rear portion of a vehicle body door, a second apertured member slidably receiving an intermediate portion of the second belt, and a control belt having one end attached to the second apertured member and the other end received by a control retractor also mounted on the vehicle door. When the door is in closed position, the inertia retractor retracts the second belt to maintain the first apertured member in a lower rearward position to position the shoulder and lap belt portions in occupant restraining positions. During movement of the door to open position, the control retractor retracts the control belt as the second apertured member slides along the second belt and moves the first apertured member from the lower rearward position to an upper forward position moving the shoulder and lap belt portions from the occupant restraining positions to easy-enter positions allowing convenient occupant access to the vehicle seat. During closing movement of the door, the control retractor protracts the control belt as the inertia retractor retracts the second belt moving the first apertured member from the upper forward position to the lower rearward position positioning the shoulder and lap belt portions in the occupant restraining positions.

3,679,230
SYSTEMS FOR DRAWING TRAILERS BEHIND TRACTORS
David J. Farrant, Welshes Farm, Clatworthy, Wiveliscombe, Somerset, England
Filed Dec. 11, 1969, Ser. No. 884,386
Int. Cl. B62d *53/00*
U.S. Cl. 280—405 B **10 Claims**



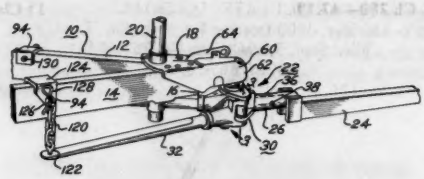
This invention is an attachment device enabling the rear wheels of a tractor to be loaded to increase the tractive effort by the tension in a chain connected between the trailer and a post on the attachment, a hydraulic actuator being arranged to move the attachment to tension the chain to supply the additional load to the rear wheels of the tractor.

3,679,231
TRAILER HITCH
Millard A. Derr, Jr., 17 Richard Court, Orinda, Calif.
Filed May 25, 1970, Ser. No. 40,068
Int. Cl. B60d *1/06*
U.S. Cl. 280—406 A **15 Claims**



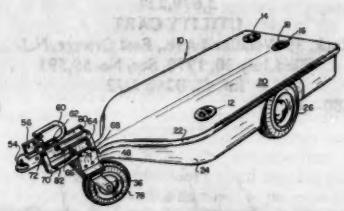
A trailer hitch which has a head demountably securable to a rearwardly extending mounting bar of the vehicle. The head permits substantial vertical adjustments before its installation to obtain standard spacings between it and the ground and includes laterally protruding flanges that mount identical load equalizing spring bar connectors. The connectors are retained to the flanges while they pivot about upright axes over a predetermined sector and can be removed from the head when they pivot through other sectors. The pivot axes are slightly inclined from the vertical. The spring bars are longitudinally tapered, retained in rearwardly directed openings in the connectors and include tensioning chains at their free aft ends secured to a retention member mounted to a forwardly extending trailer bar of the trailer. A chain engaging lever enables the simultaneous tensioning of the chain and its connection to or release from the chain retention member.

3,679,232
TRAILER HITCH
Charles A. Weber, Elkhart, Ind., assignor to Elkhart Welding & Boiler Works, Inc., Elkhart, Ind.
Filed Jan. 18, 1971, Ser. No. 107,349
Int. Cl. B62d *53/00*
U.S. Cl. 280—406 A **9 Claims**



A load equalizing hitch for trailers and the like having a spring bar assembly in which the bar is adjustable angularly in a vertical direction with respect to the ball mount of the hitch, thereby permitting an adjustment of the spring bars relative to one another and to the head to compensate for wear of the hitch parts and fatigue of the spring bars. Each of the two spring bars is adjustable independently of the other and is pivotally connected to the fixture of the assembly. After an adjustment has been made, the spring bar is locked in its adjustable position with respect to the fixture, forming a rigid operative structure.

3,679,233
VERTICALLY ADJUSTABLE TRAILER HITCH
Calvin Lee Baker, 3242 Winton Road S., and Clarence H. Rogers, 3230 Winton Road S., both of Rochester, N.Y.
Filed March 10, 1971, Ser. No. 122,682
Int. Cl. B60d *1/00*; B60p *3/22*
U.S. Cl. 280—476 R **8 Claims**



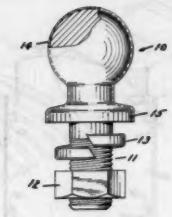
A vertically adjustable trailer hitch of the type mounted upon a trailer tongue and attachable to a towing vehicle, particularly including a ball socket arm and a parallelogram linkage interconnecting the ball socket arm and a pivotable front wheel. The parallelogram linkage enables a level ride of the trailer tongue upon the pivotable front wheel, regardless of the vertical position of the towing vehicle or hitch itself, also the hitch may be vertically extended for manual handling of the trailer apart from the towing vehicle.

3,679,234

REFLECTIVE PLASTIC COATED TRAILER HITCH BALL

Frank Collinu, 7565 W. Huron River Drive, Dexter, Mich.

Filed Sept. 17, 1969, Ser. No. 858,648
Int. Cl. B60d 1/06; F16c 11/06, 33/32
U.S. Cl. 280—511 3 Claims



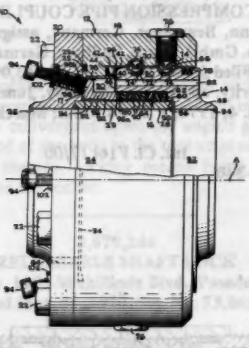
A trailer hitch ball encased in a molded reflective and friction reducing plastic covering to provide a quieter, longer wearing and more pleasing appearance.

3,679,235

PIPE SWIVEL JOINT FOR CORROSIVE FLUIDS

Armand L. Faccou, Santa Ana, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 24, 1970, Ser. No. 66,323
Int. Cl. F16l 55/00
U.S. Cl. 285—14 12 Claims



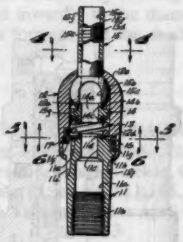
A pipe swivel joint designed especially for handling very corrosive fluids, with an annular externally-adjustable pressure plate that bears against the joint's packing, and a series of energizing screws to force the plate to compress the packing into a fluid-tight seal between the joint's outer and inner relatively rotatable elements. The screws extend through the radial wall of the joint's outer element rather than longitudinally through the inner element, thereby facilitating a reduction in the outside diameter of the inner element to provide a more compact joint of less overall radial dimension. The screws are threaded through corrosion-resistant sleeves so that they will not seize to the joint's outer element if corrosion should occur, and the sleeves are threaded into the outer element so that they can be easily replaced if necessary.

3,679,236

ALT AZIMUTH SWIVEL CONSTRUCTION

Jerome Warshawsky, 3285 Bertha Drive, Baldwin, N.Y.

Filed Oct. 16, 1970, Ser. No. 81,393
Int. Cl. F16l 27/00
U.S. Cl. 285—39 11 Claims



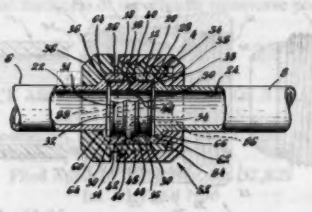
A swivel joint fitting for lighting fixtures comprises a tubular mounting base telescopingly connected by a swaged rotatable joint to a housing for relative axial rotation therewith through an arc short of 360° as the azimuthal swivel component. A ball, mounted in the housing and having a stem extending through a semicircular slot in a dome-shaped end of the housing, provides movement through an arc of 180° as the altitudinal swivel component, permitting a full right angular bend. A compression spring simultaneously provides frictional drag of predetermined force against the altitudinal and azimuthal movement.

3,679,237

COUPLING FOR JOINING GLASS PIPE SECTIONS AND THE LIKE

William M. De Angelis, Wilton, Conn., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed June 23, 1970, Ser. No. 48,971
Int. Cl. F16l 17/06, 49/00
U.S. Cl. 285—109 4 Claims



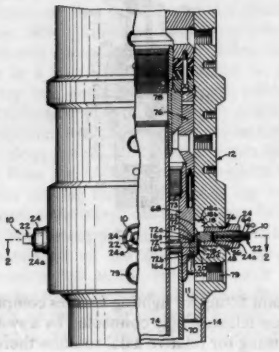
The juxtaposed ends of two glass pipe sections are joined by a coupling construction which comprises an inner coupling sleeve having its ends frictionally mounted in coupling chambers formed in cylindrical enlargements (end bells) provided at each of the juxtaposed ends to thereby effect radial fluid seals in the enlargements. An O-ring is disposed in an annular groove formed in the outer surface of the sleeve in the space between the juxtaposed ends to form fluid seals thereat. Threadedly telescoped external coupling rings are mounted over external portions of the enlargements to draw the latter toward each other to effect pressure between the enlargements and the O-ring to maintain the aforementioned fluid seals.

3,679,238

SEAT MECHANISM FOR THROUGH BORE WELL HEADS

Samuel W. Putch, Houston, Tex., assignor to FMC Corporation, San Jose, Calif.

Filed July 29, 1970, Ser. No. 59,170
Int. Cl. F16l 21/00
U.S. Cl. 285—144 4 Claims



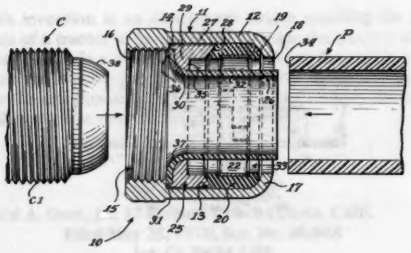
A retractable seat mechanism for a casing head comprising a plurality of arcuate segments and an actuating screw for each segment, wherein the screws are threaded inwardly to urge the segments from a retracted position until the segments drop into a pipe hanging position.

3,679,239

COMPRESSION COUPLING FOR PLASTIC PIPE

Joseph R. Schmitt, Dubuque, Iowa, assignor to A. Y. McDonald Mfg. Co.

Filed June 25, 1971, Ser. No. 156,734
Int. Cl. F16l 55/00
U.S. Cl. 285—176 10 Claims



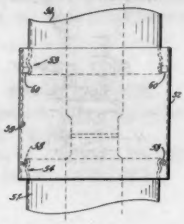
A compression coupling for connecting plastic pipe to an externally threaded hollow connector which has an end surface. Any pipe of a controlled outer diameter or made to standard outer dimensions can be used in the coupling. The coupling is a pre-assembled unit with a chamber in which slidable compressor means abuts the end surface of the connector as the coupling is screwed onto it, and the compressor means slides forwardly to compress a rubber compression ring between two wedging surfaces in the chamber and thereby squeeze the ring to clamp the end portion of a plastic pipe firmly onto a rigid sleeve which is part of the compressor means.

3,679,240

TUBULAR CIRCULAR GASKET TO SEAL AND REDUCE FORCE IN TRANSMISSION SYSTEM

Joseph A. Turgeon, Toronto, Ontario, Canada, assignor to I-T-E Circuit Breaker (Canada) Limited, Ontario, Canada

Filed April 14, 1970, Ser. No. 28,416
Int. Cl. F16l 21/06
U.S. Cl. 285—233 3 Claims



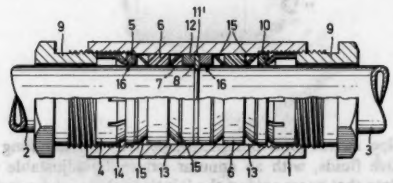
A tubular gasket is employed in a manner to maintain a water-tight joint between adjacent isolated phase bus housings and their associated clamp-on cover and, also, to reduce the magnitude of frictional forces produced during movement of one housing relative to the cover to a level sufficient to protect against buckling of the respective components.

3,679,241

COMPRESSION PIPE COUPLING

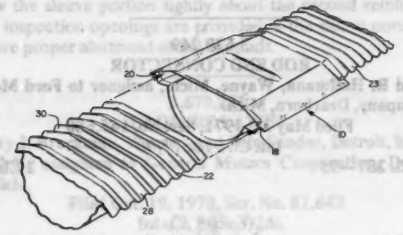
Ernst Hoffmann, Braunlage, Germany, assignor to Schmidt, Kranz & Co. GmbH, Zorge, Sudharz, Germany

Filed June 3, 1970, Ser. No. 43,099
Claims priority, application Germany, June 11, 1969, P 19 29 516.0; Feb. 4, 1970, P 20 04 921.2; March 26, 1970, P 20 14 622.9
Int. Cl. F16l 17/00
U.S. Cl. 285—340 6 Claims



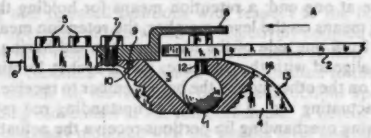
A compression type pipe coupling for connecting unthreaded pipes together or to a threaded pipe. A female threaded body has an annular collar upon which the end of the pipe rests, the pipe being held in place by an elastic plastic sealing ring, a frusto-conical washer and a male threaded sleeve which compresses the ring and washer.

3,679,242
DRAINAGE TUBE COUPLING
James R. Hess, Box 35, Bethel, Pa.
Filed April 14, 1970, Ser. No. 28,318
Int. Cl. F16l 21/00
U.S. Cl. 285—417 12 Claims



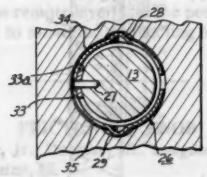
A coupling is provided, for slideably receiving ends of drainage tube therein, through its opposite open ends, and for frictionally retaining the same together.

3,679,243
COUPLING ASSEMBLY
Arthur John Hamerl, 10125-103 Ave., Grande Prairie, Alberta, Canada
Filed March 24, 1969, Ser. No. 809,745
Claims priority, application Canada, April 9, 1968, 017,137
Int. Cl. F16c 11/06
U.S. Cl. 287—21 3 Claims



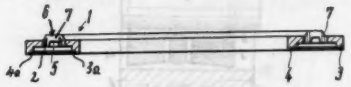
A ball and socket coupling for trailers and the like, the socket being upwardly and forwardly inclined in a body which has a forwardly convergent upwardly angled groove leading from the rear end of the body to the rear edge of the socket to guide the ball thereto, locking means being provided for locking the ball in the socket.

3,679,244
RELEASABLE SHAFT LOCK
Robert R. Reddy, 1195 Michillinda Blvd., Pasadena, Calif.
Filed Sept. 21, 1970, Ser. No. 73,865
Int. Cl. F16b 9/00
U.S. Cl. 287—20 R 6 Claims



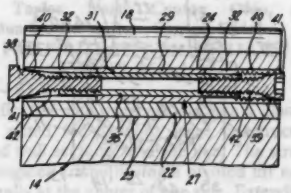
Releasable means for locking a shaft in an opening in a body, which opening is bounded by a peripheral, usually cylindrical, wall. A recess is formed in the wall and bounded at least in part by a circumferentially extending ramp-like bottom surface that extends for less than the full periphery of the wall, and a catch surface adjacent to the bottom surface. The catch surface extends radially. In the wall of the shaft there is provided a locking member which is resiliently biased to extend beyond its periphery and which can be retracted entirely within the periphery of the shaft. The lock member is restrained against rotation relative to the shaft so that when the shaft is pressed into the hole, the lock member can snap outwardly into the recess, thereby to lock the shaft in place, but the shaft can be released by twisting it so that the lock member is cammed inwardly to the diameter of the wall in which the recess is formed, and the shaft can thereafter be withdrawn.

3,679,245
ARTICLE OF MANUFACTURE
Hermann Ehrenberg, Michelstadt, Odw, Germany, assignor to Fouquet-Werk Frauz & Planck, Neckar, Germany
Continuation-in-part of Ser. No. 811,145, March 27, 1969, Pat. No. 3,578,364. This application April 27, 1971, Ser. No. 137,353
Claims priority, application Germany, Feb. 22, 1968, P 16 75 138.5; Dec. 30, 1968, P 18 17 398.3; April 27, 1970, P 20 20 469.7
Int. Cl. F16d 1/06
U.S. Cl. 287—52 6 Claims



A connecting element for connecting two coaxial elements which define with one another an annular clearance in which the connecting element is located in frictional engagement with both the coaxial elements. The connecting element is in form of an annular member of elastically yieldable material provided with a transverse annular portion with an outer and an inner annular flange portion projecting from the outer and inner margin thereof in one and the same axial direction. An axially projecting bead is provided on a side of the transverse annular portion which is opposite the flange portions and has a radial thickness corresponding substantially to three times the radial thickness of either one of the flange portions. Intermediate the flange portions at the axial side at which the latter are located, the transverse annular portion is provided with an annular groove whose steps corresponds at least approximately to the axial thickness of the annular transverse portion.

3,679,246
KEY LOCK ASSEMBLY FOR A PAIR OF RELATIVELY MOVABLE MEMBERS
Evert V. Bloomquist, and Gerald E. Bloomquist, both of P. O. Box 864, Wausau, Wis.
Filed April 29, 1970, Ser. No. 32,829
Int. Cl. F16d 1/06
U.S. Cl. 287—52.05 1 Claim



The key lock assembly has a hollow elongated locking bar with expandible end sections receivable within corresponding

facing key ways formed in adjacent surfaces of a pair of relatively movable members which are to be locked together. Located within the locking bar is an elongated connector member having linearly adjustable end members which on linear adjustment toward each other coact with the locking bar to expand the end sections thereof into frictional locking engagement with adjacent surfaces of the key ways.

3,679,247

HUB-TO-SHAFT CLAMP CONNECTION ASSEMBLY

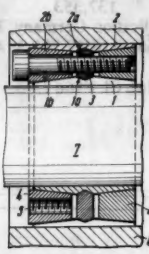
Oskar E. Peter, Schlosstrasse, 9/1, 7129 Brackenheim, and Lothar Peter, Wagnerstrasse 8, 7129 Guglingen, both of Germany, assignors to said Oskar E. Peter, by said Lothar Peter

Filed Oct. 26, 1971, Ser. No. 191,994

Claims priority, application Germany, July 26, 1971, P 21 37 313.7

Int. Cl. F16d 1/06

U.S. Cl. 287—52.06 11 Claims



To connect a hub to a shaft, spaced inner and outer rings have conical surfaces formed thereon, the conical surfaces diverging towards the outer sides of the connection. A pair of intermediate clamp rings which have essentially matching (but possibly slightly smaller conical angles) conical surfaces are inserted between the inner and outer rings, one from each side. Screws pass through one of the clamp rings and bear against its outer face, and are threaded into the other clamp ring, to tighten the rings against each other, the inner and outer rings being formed with a central recess of dove-tailed cross-section, in which a ring-shaped metal disc is inserted having an outer surface substantially matching the dove-tailed conical surfaces of the inner and outer rings. The clamp ring against which the screw surfaces bear is additionally formed with threaded openings to permit screws to be threaded therein, to then bear against the metal ring when separation of the hub to shaft connection is desired.

3,679,248

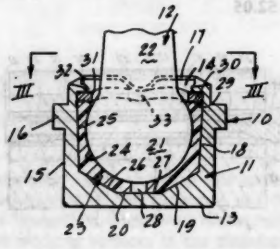
BALL JOINT

Edward J. Herbenar, Detroit, Mich., assignor to TRW, Inc., Cleveland, Ohio

Filed Aug. 5, 1971, Ser. No. 169,425

Int. Cl. F16c 11/06

U.S. Cl. 287—87 7 Claims



Preloaded ball and socket joints for automotive wheel suspensions and steering linkages of the type having the ball member enveloped by a plastic bearing compressed between the ball member and a housing to maintain a fixed tilting center for the ball in the housing while expanding to take up wear between the parts together with the added improvement of an initially locally deformed retainer spring regaining its undeformed condition as wear develops to increase the wear take-up capacity of the joint without increasing the turning torque or extruding the plastic bearing material.

3,679,249

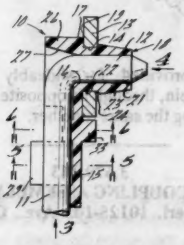
ROD END CONNECTOR

Donald R. Hoffmann, Wayne, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 21, 1971, Ser. No. 145,680

Int. Cl. F16c 11/00

U.S. Cl. 287—93 2 Claims



A connecting device for coupling an actuating rod to a lever member. The connecting device is an integrally molded plastic unit comprising a base member having a rod portion receiving aperture at one end; a retention means for holding the connecting means on the lever member, the retention means projecting from one side of the base member and having a bore axially aligned with the aperture; and a socket forming wall formed on the other side of the base member to receive an end of the actuating rod. A plurality of upstanding rod retention legs having overhanding lip portions receive the actuating rod as its right angled end is inserted through the bore of the retention means on the base member.

3,679,250

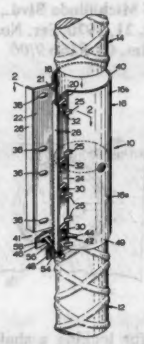
SPLICER FOR REINFORCING BARS

Ronald Eric Marsden, 53 Thorncliffe Park Drive Apt. 1211, Toronto 17, Ontario, Canada

Filed May 8, 1970, Ser. No. 35,871

Int. Cl. F16b 7/00

U.S. Cl. 287—110 2 Claims



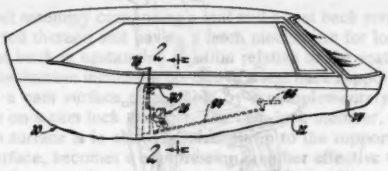
A splicer for connecting compression loader reinforcing bars in end to end alignment. The splicer has a sleeve portion

with longitudinal edges defining a gap and a pair of flanges extending radially one from each edge. A pair of projections also extend radially from the edges below the flanges and bolts pass through the flanges and projections. The projections can be drawn toward one another by tightening a bolt in the projections to draw a part of the sleeve portion tightly about an end portion of one of the bars. A second bar is then slipped into the sleeve portion and the bolts in the flanges tightened to draw the sleeve portion tightly about the second reinforcing bar. Inspection openings are provided in the sleeve portion to ensure proper abutment of the bar ends.

3,679,251
CLOSURE LATCH

Henry J. Brockman, Warren, and Bela Sandor, Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 19, 1970, Ser. No. 81,643
Int. Cl. E05c 3/26
U.S. Cl. 292—216 **4 Claims**



A vehicle body door lock includes a fork bolt mounted on the frame for movement between latched and unlatched positions, a detent mounted on the frame for movement between holding and released positions with respect to the bolt, and outside operating means which are selectively coupled and uncoupled with respect to the detent. An inside remote lever is swingably mounted on the frame and connected to the inside remote handle for movement in opposite directions upon corresponding movement of the remote handle. A detent release lever is coaxially mounted with the remote lever and has a foot overlying the detent. A connecting link is connected at one end to the release lever and the other end of the link mounts a pin slidable in a slot of a connecting lever coaxially mounted with the remote lever and release lever. The connecting lever is positionable in connected and disconnected positions and respectively located in each position by an overcenter coil torsion spring and the engagement of tabs of the lever with the detent and the frame. When the connecting lever is in connected position, the pin of the connecting link is engageable by a foot of the remote lever to move the release lever into engagement with the detent and release the detent upon movement of the remote lever in one direction by the remote handle. When the detent is moved by the bolt, the detent engages the positioning tab of the connecting lever to move the lever to disconnected position and move the pin of the connecting link out of the path of the remote lever foot. Movement of the remote lever by the remote handle in an opposite direction engages a foot of the remote lever with the positioning tab of the connecting lever to move the connecting lever to connected positions.

3,679,252
FRICTION FIT KNOB

Robert K. Howie, Jr., Decatur, Ill., assignor to The Grigoleit Company, Decatur, Ill.

Filed Dec. 7, 1970, Ser. No. 95,691
Int. Cl. E05b 3/00
U.S. Cl. 292—349 **3 Claims**

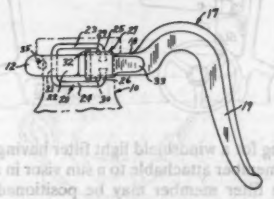
A molded knob of the type which fits over the end of a shaft and is held thereto by means of frictional engagement between the knob and the shaft. The knob has a hub with a shaft receiving socket formed therein. The socket is of irregular transverse cross-section and has a flat wall which engages a flat on the shaft. Fingers formed integrally with the hub extend into the socket. The fingers are located on the opposite side of the socket from the flat wall and are deflected in a direction away

from the flat wall upon insertion of the shaft to frictionally secure the knob to the shaft. Stop means are formed in the socket to limit the depth of insertion of the shaft. The fingers extend into the socket beyond the stop means to provide flexibility throughout their contact with the shaft.

3,679,253
DETACHABLE BOTTLE HANDLE

James B. Simms, 8441 Birch Road, Taylor, Mich.

Filed Dec. 29, 1969, Ser. No. 888,229
Int. Cl. A47j 45/10
U.S. Cl. 294—31.2 **2 Claims**



A bottle handle for use on large milk bottles and the like, and which includes a circular housing comprising a semi-circular rear housing portion and a semi-circular front housing portion hingedly connected to said rear housing portion, whereby the circular housing may be opened for detachably mounting the handle on a bottle. A releasable locking means is provided for securing the semi-circular rear housing portion to the semi-circular front housing portion after these portions have been mounted on a bottle. A handle is attached to the semi-circular rear housing portion. One of the semi-circular housing portions is provided with a length of surgical rubber which extends inwardly into gripping engagement with a bottle when the bottle handle is mounted on a bottle around the open end thereof.

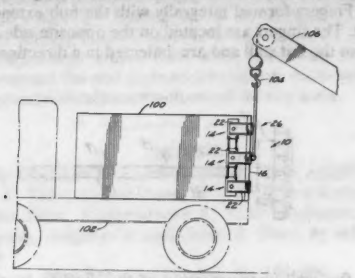
3,679,254
PANEL LIFT CLAMP ASSEMBLY

Robert B. Taylor, North Canton, Ohio, assignor to Metropolitan Industries, Inc., Canton, Ohio

Filed Feb. 12, 1971, Ser. No. 114,762
Int. Cl. B66c 1/10
U.S. Cl. 294—81 R **13 Claims**

The specification and drawings disclose a clamp assembly particularly suited for handling large construction panels, prefabricated wall sections, and the like. The structure comprises an elongated frame having a pivoted lift member connected generally at the center of one side. Extending from the opposite side of the frame are a plurality of opposed pairs of clamp plates. The clamp plates in each pair are arranged for adjusting movement toward and away from one another. Ad-

ditionally, biasing means are provided to permit each plate to tilt to compensate for irregularities in a panel being clamped



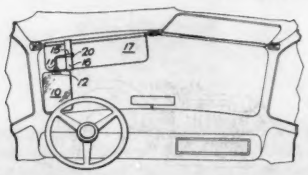
and lifted. Also, the biasing means function to return the clamp plates to their original position after they are disengaged from the panel.

3,679,255

MOUNTING MEANS FOR WINDSHIELD LIGHT FILTER

Ralph A. Nacarato, 528 Murray Hill Drive, Youngstown, Ohio

Filed Oct. 15, 1970, Ser. No. 80,923
Int. Cl. B60j 3/02
U.S. Cl. 296—97 C **3 Claims**



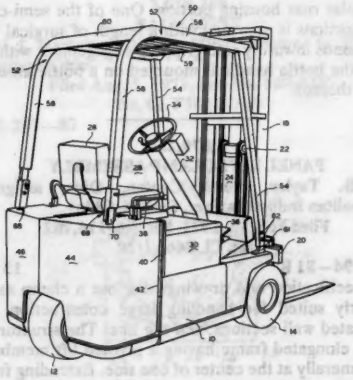
A mounting for a windshield light filter having a transparent tinted filter member attachable to a sun visor in an automobile whereby the filter member may be positioned between the driver of the automobile and a selected portion of the windshield thereof or alternately moved to a position where it is horizontally disposed beneath the top of the automobile.

3,679,256

OVERHEAD GUARD FOR LIFT TRUCK

James L. Orns, Battle Creek, Mich., assignor to Clark Equipment Company

Filed May 10, 1971, Ser. No. 141,889
Int. Cl. B62d 25/06
U.S. Cl. 296—102 **7 Claims**



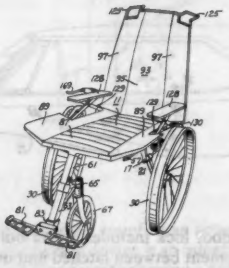
An overhead guard for the protection of operators of lift trucks of a type in which the rear truck portion is housed in hinged and transversely swingable doors or body housing portions to permit ready access to the rearwardly located truck operating components. The rear support legs of the overhead guard may be quickly connected to and detached from the swingable doors by an adjustable sleeve and short support legs which are secured to the doors.

3,679,257

FOLDABLE WHEEL CHAIR

Roy A. Jacuzzi, Orinda, and Kenneth A. Jacuzzi, Lafayette, both of Calif., assignors to Jacuzzi Research, Inc., Berkeley, Calif.

Filed May 15, 1970, Ser. No. 37,713
Int. Cl. A47c 4/20
U.S. Cl. 297—42 **3 Claims**



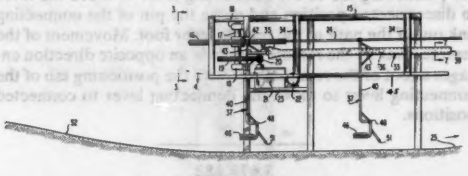
A favorable three wheeled wheelchair with solid seat and back, the back being hinged for folding down upon the seat, while the side wheel and front wheel assemblies are hingedly secured for folding in under the seat, the entire wheel chair in its folded condition being of light weight and capable of storage in the trunk of a car.

3,679,258

SEAT UNIT FOR SKI LIFT APPARATUS

David R. Pender, 1018 Marion St., Columbia, S.C.

Division of Ser. No. 769,559, Oct. 22, 1968, Pat. No. 3,621,789. This application April 22, 1970, Ser. No. 38,633
Int. Cl. B61d 33/00
U.S. Cl. 297—195 **4 Claims**

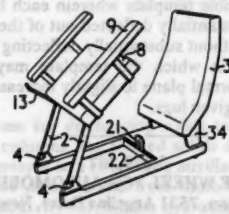


An apparatus for conveying skiers safely to the top of a ski slope characterized by saddle-type seats which are mounted and de-mounted by skiers from the rear while the seats are moving at a relatively fast rate in comparison to conventional equipment, thereby greatly increasing the overall speed and capacity of the lift without decreasing safety. Existing conventional equipment is readily convertible.

3,679,259
SEAT BACK LATCH
Chris P. Simonelli, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 25, 1970, Ser. No. 92,740
Int. Cl. B60n 1/06
U.S. Cl. 297—379 2 Claims

A seat assembly comprising a seat and a seat back pivotally supported thereon and having a latch mechanism for locking the seat back in upstanding position relative to the seat. The latch mechanism includes a portion of a seat back support arm having a cam surface engageable by a complementary cam surface on a cam lock member. The cam lock member, when its cam surface is in abutting relationship to the support arm cam surface, becomes a compression member effective to resist any force tending to tilt the seat back forwardly over the seat.

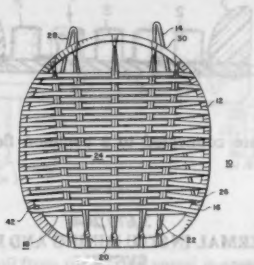
3,679,260
INVALID CHAIRS
Austin G. Morse-Brown, Wolverhampton, England, assignor to The Bath Institute of Medical Engineering, Bath, England
Filed May 21, 1970, Ser. No. 39,366
Int. Cl. A47c 15/00
U.S. Cl. 297—338 5 Claims



An invalid chair to facilitate entry and exit from the chair by an invalid comprises a chair base, a seat portion, guide means connecting said seat portion to said chair base, said guide means guiding said seat portion from a lowered position to a raised position with a combined upward, forward and forwardly tilting movement, and resilient means adapted to urge the seat portion towards said raised positions and a latch mechanism to enable the seat portion to be held in the lowered position.

3,679,261
AUTOMOBILE SEAT BACK
Christo G. Slabakov, 5803 Doral Apts., Bldg. #58, Cornwells Heights, Pa.
Filed April 3, 1970, Ser. No. 25,311
Int. Cl. A47c 7/02
U.S. Cl. 297—231 1 Claim

A device is disclosed for fitting over the back of an automobile seat. The device when used provides increased lateral stability to the driver or passenger of an automobile and in addition supports the person against the webbing, away from the fabric of the seat itself, thereby providing a certain cooling effect. The device includes an elliptical frame having a hanger



member attached to the rear thereof for hooking over the back of a seat. Resilient strips connected to either side and the top and bottom of the elliptical frame are woven together to form a webbing against which a users back rests.

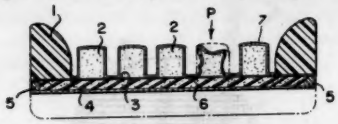
3,679,262
LEG REST FOR VEHICLE DRIVER'S SEAT
Eugene Slavitt, 11987 Audubon Ave., Philadelphia, Pa.
Filed Nov. 19, 1970, Ser. No. 91,059
Int. Cl. A47c 7/50
U.S. Cl. 297—427 2 Claims

An auxiliary leg rest attachable to the seat of a vehicle next to the right leg of the driver to support the leg and prevent fatigue and muscle strain. The rest is made of formed plastic with a base seatable on the vehicle seat and having a downturned front which anchors the base against rearward shift by abutting the nose of the vehicle seat and a side wall extending angularly upward from the base and against which the thigh of the driver rests. A resilient cushion is secured to the underside of the base and frictionally engages the vehicle seat to prevent side shifting of the leg rest due to thigh pressure. An adjustable anchoring strap secures the leg rest to the seat in desired position by means of hooks which anchor the opposite ends of the strap to the vehicle seat frame.

3,679,263
SEAT COMPRISING INDEPENDENTLY MOUNTED BLOCKS OF DEFORMABLE ELASTIC PADDING
Jean Georges Cadiou, St. Cloud, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed June 29, 1970, Ser. No. 50,717
Claims priority, application France, June 27, 1969, 6921734
Int. Cl. A47c 7/02
U.S. Cl. 297—456 2 Claims

Seat comprising deformable elastic padding which consists

of blocks of elastic material which are juxtaposed to each other but are connected to each other only to the extent that



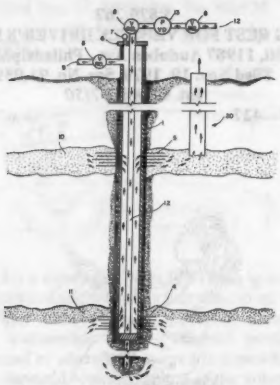
their bases are connected to a common flexible mounting sheet.

3,679,264

GEOTHERMAL IN SITU MINING AND RETORTING SYSTEM

Allen T. Van Huisen, 1516 Granvia Altamira, Palos Verdes Estates, Calif.

Filed Oct. 22, 1969, Ser. No. 868,395
Int. Cl. E21b *43/24, 43/28*
U.S. Cl. 299—4 **5 Claims**



The following disclosure relates to a system for the recovery of minerals, metals, and chemicals in situ by the utilization of geothermal heat energy which is transferred from one stratum or zone within the interior depths of the earth into another stratum or zone in the earth's interior, which contains minerals, oil, metals, or chemicals whose recovery is enhanced by coming in contact with the invading heat energy, and is accomplished by a closed system which permits the escape of high pressure geothermally heated gas or fluid from the one subsurface zone within the earth into the other subsurface zone within the earth. Alternatively a fluid may be injected into the geothermal zone, heated therein, transferred into the other zone, and the fluidized body of material from the other zone recovered through a second well.

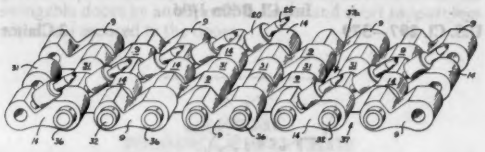
3,679,265

CHAIN FOR MINING MACHINES AND THE LIKE

Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Company, Cincinnati, Ohio

Filed Oct. 30, 1970, Ser. No. 85,601
Int. Cl. E21c *25/34*
U.S. Cl. 299—84 **19 Claims**

An endless chain for a mining machine or the like which can be made up to any desired length and width. In one embodiment, the chain can be made to carry cutting tools in any suitable pattern or arrangement and will comprise a plurality of standard link elements and a plurality of standard chain block elements. In another embodiment, the chain can serve as an endless tread for a self-propelled mining machine, in which instance it may be comprised of a plurality of identical, standardized link elements or it may be comprised of a plurality of standard link elements and a plurality of one or more types of modified link elements. In both embodiments, the link elements, or the link and chain block elements, will be joined together by connecting pins of appropriate lengths.

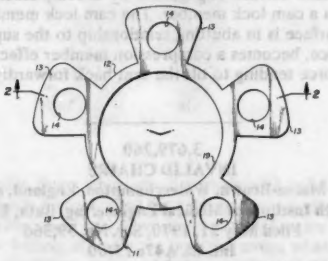


3,679,266

LUG TEMPLATE

Robert C. Jenkins, 133 Antonia Drive, Jackson, N.J.

Substitute for Ser. No. 725,697, May 1, 1968. This application Dec. 17, 1970, Ser. No. 99,222
Int. Cl. B60b *3/16*
U.S. Cl. 301—9 DN **5 Claims**



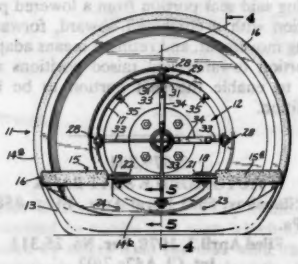
A lug template in which a plurality of lugs are rotatably mounted to a flexible template wherein each lug may be individually and substantially deflected out of the normal plane of the template without substantially deflecting the remaining lugs and further in which the template may be limitedly deformed in its normal plane to slightly increase the effective distance between given lugs.

3,679,267

SPARE WHEEL FOR AUTOMOBILE

Octave B. Zachmann, 7531 Angeline Drive, New Hope, Minn.

Filed Aug. 14, 1970, Ser. No. 63,771
Int. Cl. B60b *11/00*
U.S. Cl. 301—38 R **9 Claims**



A spare wheel for automobiles which removably attaches to the wheel of a flat tire and permits movement of the vehicle

without fixing or removing the tire. The spare wheel comprises a pair of rigid wheel segments of unequal size which are pivotally connected and together form a wheel having a diameter at least as great as the tire. The smaller segment pivots outwardly to permit attachment of the unit to the wheel of the flat tire, after which the vehicle is advanced until the segments can be returned to the wheel forming position. The edge of the first segment which is common with the second segment is arcuately shaped to permit it to roll in either direction notwithstanding composition of the road surface.

3,679,268

PROCESS FOR DISCHARGING SOLIDS TREATED WITH LIQUIDS FROM VERTICAL COLUMNS

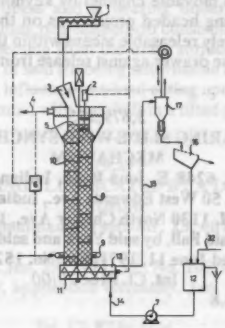
Ludwig Jurgen-Lohmann, Frankfurt am Main, and Rolf Holtermann, Augsburg, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Feb. 3, 1970, Ser. No. 8,179

Claims priority, application Germany, Feb. 8, 1969, P 19 06 400.7

Int. Cl. B65g *53/04*

U.S. Cl. 302—14 **7 Claims**



In the process for discharging solids treated with liquids from vertical columns, the treated solids are transported by means of a conveyor to a circulating auxiliary liquid with variable hydrostatic pressure and from there to the subsequent stage of treatment. By varying the hydrostatic pressure of the cycle of auxiliary liquid, the pressure conditions in the system can be adjusted in a manner to permit discharging from the column pure solid or solid with a defined amount of adhering liquid, or introducing defined amounts of liquid from the auxiliary cycle into the column in countercurrent flow with respect to the direction of flow of the solid.

3,679,269

TRANSPORT OF SULPHUR

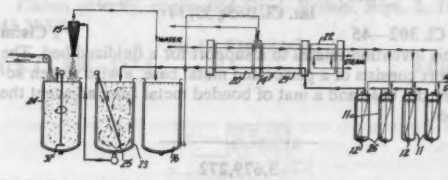
Herbert James Elliott, Bradford-on-Avon, England, assignor to Elliott Associated Developments Limited, London, England

Division of Ser. No. 659,386, Aug. 9, 1967, Pat. No. 3,476,441. This application March 21, 1969, Ser. No. 832,519The portion of the term of this patent subsequent to Nov. 4, 1986, has been disclaimed.

Int. Cl. B65g *53/30*

U.S. Cl. 302—14 **5 Claims**

This invention relates to the preparation of sulphur for transport through a pipeline in a carrier liquid in which molten sulphur is introduced into a light oil fraction. There are means for cooling the sulphur-loaded oil and precipitating the sulphur from the oil. A blending vessel is provided which mixes the precipitated sulphur with the carrier liquid and the



sulphur-loaded oil from the mixing vessel is passed to a countercurrent heat exchange with the separated oil returning to the vessel.

3,679,270

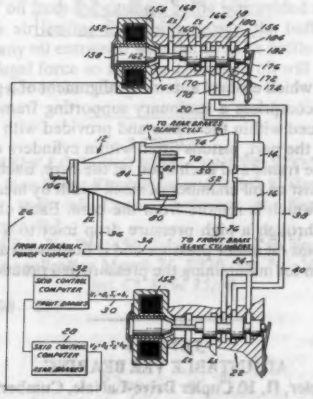
SKID CONTROL APPARATUS FOR VEHICLE BRAKE SYSTEM

Zbigniew J. Jania, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 15, 1970, Ser. No. 46,076

Int. Cl. B60t *8/02*

U.S. Cl. 303—21 F **8 Claims**



A brake system having a master cylinder and a slave cylinder connected to the master cylinder for actuating a wheel braking device is equipped with skid control apparatus. Means are provided for applying a first axial force to one side of the piston in the master cylinder. A skid control actuating means is connected to the master cylinder to provide a second axial force to the piston in opposition to the first axial force. The second axial force exerted by the skid control actuator means on the master cylinder piston is dependent upon the fluid output pressure from a skid control valve means, the output from the skid control valve means being the input to the skid control actuator means. The pressure level of the output from the skid control valve means is dependent upon the magnitude of an input signal supplied to the valve means. Power assist means are described which reduce the effort required to be expended by the vehicle operator to actuate the braking system.

3,679,271

SUPPORT FOR A FLUIDIZED BED

Raymond C. Clark, and Donn G. Ziebell, both of Orange, Conn., assignors to Brunswick Corporation, Chicago, Ill.

Filed Nov. 19, 1969, Ser. No. 878,103
Int. Cl. B65g 53/34
U.S. Cl. 302—45 1 Claim

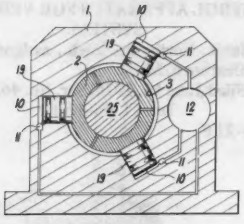
This invention relates to a support for a fluidized bed. The support consists of a perforated metal base, a wire screen adjacent the base and a mat of bonded metal fiber adjacent the screen.

3,679,272

AUTOMATIC ALIGNMENT BEARINGS FOR GUIDING IN TRANSLATIONAL OR ROTATIONAL MOTION

Charles Costa, Gradignan; Andre Loupere, Arcachon; Philippe Monsel, Pessac, and Bertrand Schmitt, Bordeaux, all of France, assignors to Commissariat a L'Energie Atomique, Paris, France

Filed Feb. 2, 1971, Ser. No. 111,872
Claims priority, application France, Feb. 2, 1970, 7003473
Int. Cl. F16c 17/16
U.S. Cl. 308—9 5 Claims



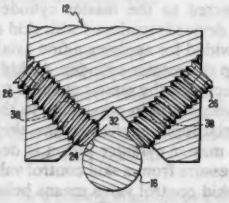
A bearing which ensures automatic alignment of a part to be guided and comprises a stationary supporting frame, a core which is placed within the frame and provided with elements for securing the part, pistons fitted within cylinders which are formed in the frame and each open on the core. Each piston is applied against an oil chamber of small width by means of the piston face which is remote from the core. Each chamber is connected through a high pressure drop inlet to a reservoir which contains oil under pressure and is fitted with a compensation system for maintaining the pressure at a practically constant value.

3,679,273

ADJUSTABLE VEE BEARING

John A. Cupler, II, 10 Cupler Drive-LaNale, Cumberland, Md.

Filed May 5, 1970, Ser. No. 34,787
Int. Cl. F16c 23/02, 29/10
U.S. Cl. 308—36 10 Claims



An adjustable Vee bearing wherein a bearing defined axis may be adjusted within the bearing itself.

3,679,274

BROILER DRAWER AND SLIDE

Joseph W. Nance, Cleveland, Tenn., assignor to Magic Chef, Inc., Cleveland, Tenn.

Filed Sept. 25, 1970, Ser. No. 75,581
Int. Cl. F16c 21/00
U.S. Cl. 308—3.6 5 Claims

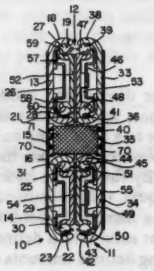
A broiler drawer for a cooking range is carried by drawer guides each of which is made of a pair of similar metal channels each having a nylon guide block embracing and slidably guiding portions of the other and preventing metal-to-metal contact between the channels. The broiler drawer is releasably mounted on the movable channel by keyhole slots in its bottom wall engaging headed projections on the movable channel, and selectively releasable means within the broiler drawer normally hold the drawer against release from its guides.

3,679,275

BALL BEARING SLIDE WITH SYNCHRONIZING MECHANISM

Herbert S. Fall, 6248 E. Iona Road, Indianapolis, Ind.; William D. York, 50 West Edwards Ave., Indianapolis, Ind., and Larry D. Huff, 1130 North Chester Ave., Indianapolis, Ind., assignors to said Fall, by said York and said Huff

Filed June 11, 1971, Ser. No. 152,258
Int. Cl. F16c 29/00
U.S. Cl. 308—3.8 13 Claims



A drawer slide structure in which two mating slide rails oppositely enclose an intermediate member which carries a roller peripherally extending into longitudinal runways formed in the rails, the runway floors presenting surfaces of one material for pressure engagement by the peripheral surface of another material presented by the roller, the two materials being of such character as to establish a driving connection inhibiting slippage therebetween. In the optimum form, the two materials are of the type known as "VELCRO" brand hook and loop tape, and preferably the hook type tape is on the roller while the loop type tape is on the runway floors, though that relationship may be reversed. Alternatively, one of the materials may be relatively soft and elastically deformable by the other material which is relatively hard and crenelated or otherwise roughened.

3,679,276

SELF-ALIGNING MOUNTING DEVICE, PARTICULARLY FOR HYDRAULIC OR PNEUMATIC CYLINDERS

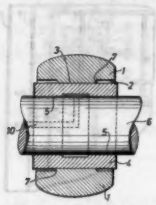
Stig Gote Stenlund, Boras, Sweden, assignor to Monsun-Tison AB, Boras, Sweden

Filed March 4, 1971, Ser. No. 120,840

Claims priority, application Sweden, March 5, 1970, 2968/70

Int. Cl. F16c 27/00

U.S. Cl. 308—26 3 Claims



A self-aligning mounting device, particularly for the attachment of hydraulic or pneumatic cylinders or piston rods, comprising a mounting lug, a bushing fitted in the lug and a shaft journalled in said bushing. The circumference of at least a central portion of the bushing consists of a material having a high surface hardness and is bearing under a certain play against a surrounding ring-shaped rib consisting of non-elastic material and projecting from the inner surface of the mounting lug, the edges of said rib being deformable by plastic deformation under the influence of a load acting upon the mounting device when mounted with the shaft in a tilted position.

3,679,277

SEALED BEARINGS LUBRICATED BY A LUBRICATING MEDIUM

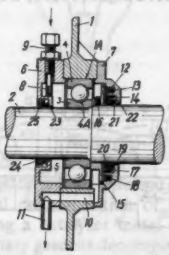
Heinz Dohmen, Dominikus-Vraetz-Str. 23, 4070 Rheydt, Germany

Filed Jan. 20, 1971, Ser. No. 107,946

Claims priority, application Germany, Jan. 30, 1970, P 20 04 167.2

Int. Cl. F16c 1/24

U.S. Cl. 308—187.1 5 Claims



A dynamoelectric machine, such as a motor, has its rotor shaft journaled in antifriction bearings which are seated in an opening of the machine housing and are sealed from the interior and exterior of the machine by elastically deformable glide-ring structures, the bearing space communicating with the outside through lubricant injection and drainage duct means. A cover is rigidly mounted on the machine housing on the inner side thereof and coaxially surrounds the shaft. The cover and the shaft form together an annular air gap labyrinth having fixed parts mounted on the cover and rotatable parts fastened to the rotor shaft, the respective parts of the labyrinth seal straddling each other so that the effective length of the air gap is correspondingly extended. A glide-ring seal coaxially surrounds the shaft and is seated on the shaft to seal the extended air gap.

3,679,278

OIL SEAL ARRANGEMENTS FOR ROTARY SHAFTS

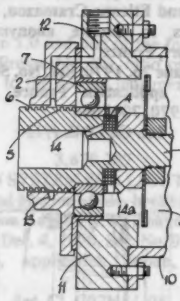
Sydney Lucas, deceased, late of 287 Preston Road, Harrow, Middlesex, England (by Hilde Katie Lucas, administratrix)

Filed Sept. 2, 1970, Ser. No. 68,946

Claims priority, application Great Britain, Sept. 2, 1969, 43,383/69

Int. Cl. F16c 33/76

U.S. Cl. 308—187.1 6 Claims



An oil seal arrangement for a rotary shaft which is supported by a bearing within an end closure of a casing, the casing having a shroud which extends around an extended portion of the shaft, and there is provided a passage in the shroud and through which air can be forced through the bearing into the casing and the shaft is provided with a passage through which air can escape from the casing. In order to prevent escape of oil from the casing a baffle is provided and through which the air leaving the casing passes, the baffle acting to coalesce any oil entrained with the air. The baffle is subjected to centrifugal force so that the coalesced oil will be returned to the interior of the casing.

3,679,279

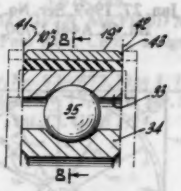
SELF-LOCKING RING CONSTRUCTION

Horace B. Van Dorn, Kinsington, and Ralph S. Howe, Jr., New Britain, both of Conn., assignors to Textron, Inc., Providence, R.I.

Division of Ser. No. 741,456, July 1, 1968, Pat. No. 3,521,342. This application March 26, 1970, Ser. No. 30,611

Int. Cl. F16c 35/06

U.S. Cl. 308—236 6 Claims



This invention contemplates a resilient self-locking structure involving the use of a plurality of resiliently loaded clamp feet angularly distributed in concentric relationship with respect to a ring member, such as the inner or outer race ring of an antifriction bearing. The clamp feet are embedded in an elastomeric material, isolated from one another, and capable of providing biting contact either upon a shaft or within a bore to which the structure is mounted.

The method of this invention includes forming a cylindrical annular structure with a plurality of angularly distributed axially extending slots. This slotted structure is held in radially spaced relation with the ring to be mounted, while elastomeric

material is caused to fill the slots and the annular space between the ring and the cylinder, being cured to bonded relation with the rigid parts. The interconnected segments are separated from one another by removal of material from an axial end of the cylinder. The final external or internal clamping diameter is thus essentially determined by the cylinder diameter.

3,679,280

CLOSET FOR STORAGE OF CLOTHING AND THE LIKE

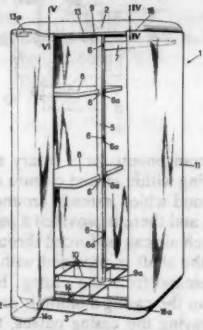
Claude Friederich, and Etienne Cramazou, both of Mulhouse, France, assignors to Societe anonyme Dite: Plastra, Strasbourg-Neudorf, France

Filed June 26, 1970, Ser. No. 50,033

Claims priority, application France, June 26, 1969, 6921571; Feb. 26, 1970, 7007004

Int. Cl. E04h 1/12

U.S. Cl. 312—6 **24 Claims**



A collapsible closet comprises a bottom element and a top element, both rigid and similar in shape and size and joined together by a central post and by a flexible peripheral wall stretched over a major portion of the periphery of the closet between grip devices on the top and bottom elements. The peripheral wall has a flexible unconnected free end able to close a front opening of the closet or be fastened to the top and bottom elements at the edge of the opening so as to preserve the same.

3,679,281

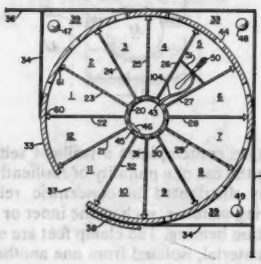
VENTED CLOTHES CABINET

Kurt Lehovec, 11 Woodlawn Drive, Williamstown, Mass.

Filed Jan. 27, 1969, Ser. No. 794,111

Int. Cl. A44f 25/00

U.S. Cl. 312—31 **5 Claims**



A cabinet for garments providing provisions for venting of the garments by air ducts guiding the ventilation to a position within a garment. A rigid support for a garment with a suction duct extending to a position within the garment.

3,679,282

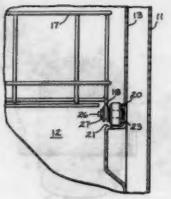
METHOD AND STRUCTURE FOR CUSHIONING THE OPERATION OF A MOVABLE RACK IN A DISHWASHER

Melvin R. Kauffman, Louisville, Ky., assignor to General Electric Company

Filed Sept. 3, 1970, Ser. No. 69,274

Int. Cl. A47b 88/14

U.S. Cl. 312—311 **9 Claims**



A slidable dish-supporting rack in a front-opening dishwashing machine wash chamber is provided with a unique wheel structure including a resilient tire on oppositely mounted rack wheels whereby wear on the track surface beneath the wheels is reduced and quieter, smoother movement of the rack is achieved.

ERRATUM

For Class 312—312 see:
Patent No. 3,679,065

3,679,283

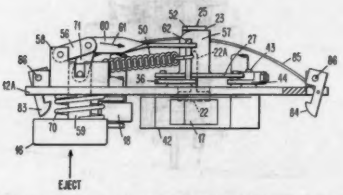
CARTRIDGE LOCK ACTUATOR

Donovan M. Janssen, and Clarence G. Meyer, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed March 10, 1971, Ser. No. 122,868

Int. Cl. A47b 88/00, 95/00; G11b 3/00

U.S. Cl. 312—319 **4 Claims**



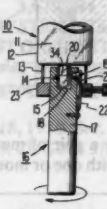
In a tape cassette or cartridge player, cassette locking is activated by cassette insertion. Unlocking is activated by a release button. The cassette is held in a cassette receiving well by two pivoted holddowns on opposite ends of the well. Clamping force is provided by placing a moment about the pivot point of the two holddowns. This moment is created by typing the two holddowns together with a flexible media and placing the media in tension. A spring-urged pivoted link supplies the tension and cooperates with cassette insertion and ejection mechanism for respectively pivoting the holddowns into cassette retention and release positions.

3,679,284

METHOD FOR FILLING AN EVACUATED ELECTRON TUBE WITH GAS TO ATMOSPHERIC PRESSURE

Earle Solomon Thall, Waverly, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,787
Int. Cl. H01j 9/50
U.S. Cl. 316—2 3 Claims



Method includes scribing a circumferential cut on the glass exhaust tubulation of an electron tube, positioning the tubulation inside a close-fitting, closed chamber, cracking the tubulation on the cut, and slowly filling the chamber and tube with gas at a low rate of inflow to atmospheric pressure. Apparatus includes a close-fitting, closed chamber having a flexible portion that seals over the tubulation, a solid portion that closely fits over the tubulation, and a means to fill the tube and chamber with gas at a low rate of inflow to atmospheric pressure.

3,679,285

GETTERING PROCESSES FOR ELECTRIC LAMPS AND SIMILAR DEVICES

Edward G. Zubler, Chagrin Falls, Ohio, assignor to General Electric Company

Division of Ser. No. 826,888, May 22, 1969, Pat. No. 3,580,856. This application Dec. 28, 1970, Ser. No. 101,589
Int. Cl. H01j 7/18, 17/26
U.S. Cl. 316—25 6 Claims

In the process of gettering, the rate and extent (to about 100 percent) of thermal decomposition of P_3N_5 getter are increased by providing a catalyzer metal in contact with the solid P_3N_5 or its primary gaseous decomposition products.

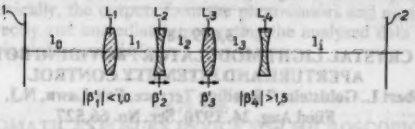
3,679,286

ZOOM LENS OBJECTIVE FOR STEREOSCOPIC VISION MICROSCOPES

Walter Klein, Auf Hohl 36, 6301 Wissmar, Germany

Continuation-in-part of Ser. Nos. 377,913, June 25, 1964, abandoned, and Ser. No. 769,442, Oct. 21, 1968, abandoned. This application Jan. 19, 1970, Ser. No. 3,849
Claims priority, application Germany, July 6, 1963, L 45 284
Int. Cl. G02b 15/16, 21/22
U.S. Cl. 350—184 3 Claims

The invention is a low-power zoom lens system for a stereoscopic vision microscope characterized by an objective having four lens members, the first and the fourth lens members being fixedly mounted, and the second and third lens members being mounted between the first and fourth lens members for movement relative to each other. The pupil is positioned within the objective. The absolute magnifying power of the first lens



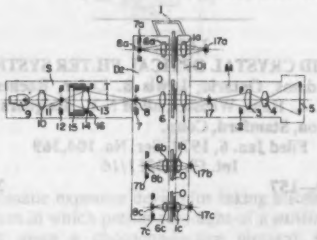
member is less than 1.0 and that of the fourth lens member is greater than 1.5. Preferably, the ratio of the absolute focal length of the third to the second lens member is greater than 1.3.

3,679,287

ILLUMINATION SYSTEM FOR LIGHT MICROSCOPES

Kinji Takahashi, and Megumu Shio, both of Yokohama, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 4, 1970, Ser. No. 95,069
Claims priority, application Japan, Dec. 16, 1969, 44/118912
Int. Cl. G02b 21/08
U.S. Cl. 350—87 3 Claims



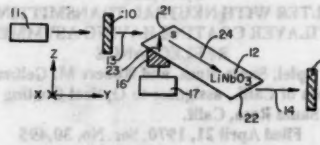
In a microscope utilizing Kohler's illumination method, each ratio of a focal length of an objective to that of a paired condenser lens of a plurality of such objective-and-condenser-lens pairs is made constant regardless of the magnifying powers of these pairs. Uniformly illuminated field of view is always obtained without adjusting the field stop and aperture stop even when the objective is changed.

3,679,288

TUNABLE ACOUSTO-OPTIC METHOD AND APPARATUS

Stephen E. Harris, Palo Alto, Calif., assignor to Chromatix, Inc.

Continuation of Ser. No. 820,873, May 1, 1969, abandoned. This application Nov. 13, 1970, Ser. No. 89,379
Int. Cl. G02f 1/24
U.S. Cl. 350—149 54 Claims



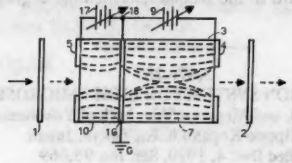
Polarized light waves propagate collinearly with acoustical waves in an optically anisotropic media. For nearly matched momentum vectors of the ordinary optical wave, extraordinary optical wave, and acoustic wave, diffraction of light into the orthogonal polarization occurs in a bandwidth determined by

the birefringence and length of the media. The diffracted light may be selected by an output analyzer to form a band-pass filter. The operating point of the filter is varied by varying the frequency of the applied acoustical waves. A theory of operation is set forth together with example embodiments.

3,679,289
CRYSTAL LIGHT MODULATOR PROVIDING BOTH APERTURE AND INTENSITY CONTROL

Robert L. Goldstein, 7 Reading Terrace, Fair Lawn, N.J.

Filed Aug. 24, 1970, Ser. No. 66,527
Int. Cl. G02f *1/26, 1/28*; F02f *1/36*
U.S. Cl. 350—150 **5 Claims**

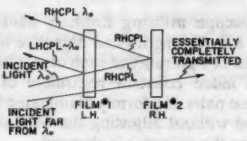


A Pockels Cell provided with annular electrodes provides intensity control of a light beam or an aperture control depending on the geometry. Two cells may be combined to provide control of both beam size and intensity.

3,679,290
LIQUID CRYSTAL OPTICAL FILTER SYSTEM

James E. Adams, Ontario; Lewis B. Leder, Rochester, and Werner E. L. Haas, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1971, Ser. No. 104,369
Int. Cl. G02f *1/16*
U.S. Cl. 350—157 **20 Claims**



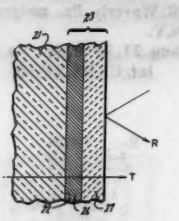
An optical filter system capable of transmitting light at substantially all wavelengths of incident radiation while simultaneously reflecting radiation at a single wavelength band or plurality of wavelength bands within the incident radiation is described. The system employs liquid crystal films having optically negative properties but which are opposite in intrinsic screw sense.

3,679,291
FILTER WITH NEUTRAL TRANSMITTING MULTILAYER COATING HAVING ASYMMETRIC REFLECTANCE

Joseph H. Apfel, Santa Rosa, and Robert M. Gelber, Rohnert Park, both of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed April 21, 1970, Ser. No. 30,495
Int. Cl. G02b *1/10*
U.S. Cl. 350—164 **18 Claims**

Filter with neutral transmitting multilayer coating having asymmetric reflectance with strong color on one side. Certain embodiments have low reflectance on the other side over a broad spectral region which covers at least a visible portion of the electromagnetic spectrum. Certain of the filters have a single metal layer with at least one dielectric layer, whereas

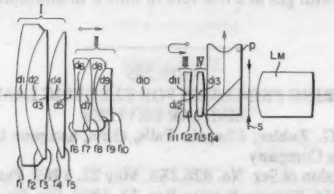


others of the filters have a pair of metal or absorbing layers, each of which is paired with one or more dielectric layers.

3,679,292
CONTINUOUSLY-VARIABLE-MAGNIFICATION AFOCAL LENS SYSTEM

Kawazu Motoaki, Kawasaki, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed May 17, 1971, Ser. No. 144,158
Claims priority, application Japan, May 21, 1970, 45/42839
Int. Cl. G02b *15/16*
U.S. Cl. 350—184 **2 Claims**

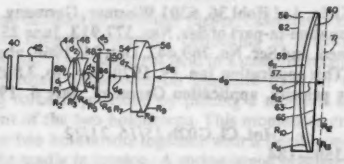


A zoom lens for cameras is provided which comprises four groups. The third group consists of a biconcave lens both surfaces of which have the same radius of curvature, and the fourth group consists of a biconvex lens both surfaces of which have the same radius of curvature. In combination of these third and fourth groups with the first and second groups, the spherical aberration as well as astigmatism of the lens system may be limited within a very small range and a flat image is obtained.

3,679,293
SCHMIDT OPTICAL SYSTEM SUITABLE FOR A PANORAMIC SCANNING CAMERA INCLUDING MEANS TO COMPENSATE FOR VARIATIONS IN OFF-AXIS MAGNIFICATION

James G. Baker, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 680,621, Nov. 6, 1967, Pat. No. 3,548,729.
This application Dec. 15, 1969, Ser. No. 889,787
Int. Cl. G02b *15/00, 3/04, 17/00*
U.S. Cl. 350—184 **10 Claims**



The subject invention provides an optical system that is particularly well suited for use in a panoramic scanning camera. It

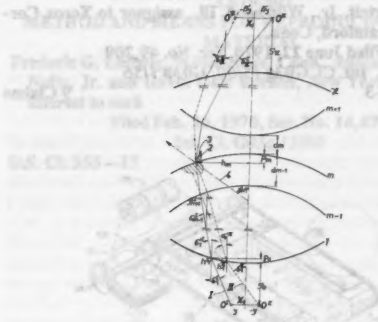
has a primary image-forming system followed by a Schmidt system having positive and negative components. A pair of correcting prisms can be placed between the primary and Schmidt systems. An aspheric surface on one of the prisms is imaged by refraction into the vicinity of the Schmidt components. Components to correct variations in off-axis magnification are also included.

3,679,294

FRESNEL OPTICAL SYSTEMS HAVING ECHELONS ON AT LEAST ONE OF ITS FACES

Christian Hofmann, Jena, and Jorg Neumann, Hermsdorf, both of Germany, assignors to Jenoptik Jena G.m.b.H., Jena, Germany

Filed Nov. 18, 1970, Ser. No. 32,494
Int. Cl. G02b 3/08
U.S. Cl. 350—211 9 Claims



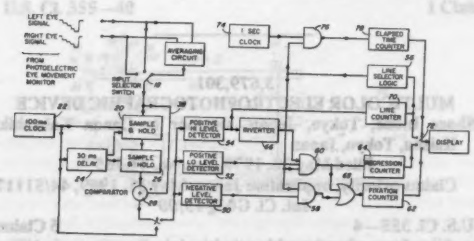
An optical system comprising at least one optically active face has Fresnel echelons on one of these optically active faces. The echelons and the face carrying them are corrected in such a manner as to produce an aberrationless image of a circle substantially concentric with the optical axis of the system. The state of correction of the system is mathematically defined. The system may consist of one or a plurality of lenses or it may be a reflector.

3,679,295

AUTOMATIC ELECTRONIC READING PATTERN ANALYZER

Joel S. Newman, Framingham, and Marvin E. Jernigan, Boston, both of Mass., assignors to Biometrics, Inc., Cambridge, Mass.

Filed April 29, 1971, Ser. No. 138,595
Int. Cl. A61b 3/10
U.S. Cl. 351—6 13 Claims



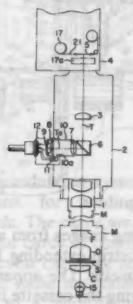
A subject's eye movement, while reading, is monitored by a photoelectric sensing device. The input from the photoelectric sensor comprises a signal, the amplitude of which is a direct function of the position of the subject's eye. The differences in successively sampled signals are compared to provide an indication of the character of each eye movement, such as normal advancements, fixations, regressions and return sweeps, which are the primary characteristic eye motions during reading. The invention employs means for analyzing automatically and electronically, the outputs from the photosensors and means for directly and immediately presenting the analyzed data in readable alpha-numeric form.

3,679,296

AUTOMATIC EXPOSURE DEVICE FOR MICROSCOPIC MOTION PICTURE PHOTOGRAPHY

Hiroshi Tanaka, and Toshiyuki Arai, both of Yokohama, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 22, 1971, Ser. No. 117,438
Claims priority, application Japan, Feb. 25, 1970, 45/17888
Int. Cl. G03b 41/00
U.S. Cl. 352—84 1 Claim



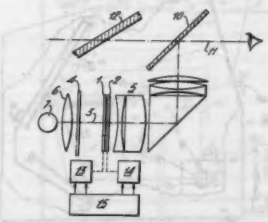
An automatic exposure device for taking microscopic motion pictures in which preliminary light of a suitable intensity is thrown upon a photoconductive element and during photographing operation such preliminary illumination is eliminated while the photoconductive element is illuminated solely by light to be measured, whereby the photo-response speed of the photoconductive element may be increased to ensure more accurate exposure measurement to be effected.

3,679,297

DISPLAY SYSTEMS

Simon M. St. L. Searle, Cranham, and Christopher H. C. Walker, Isle of Wight, both of England, assignors to Smiths Industries Limited, London, England

Filed Feb. 26, 1970, Ser. No. 14,439
Claims priority, application Great Britain, Feb. 28, 1969, 10,815/69
Int. Cl. G03b 21/00; G09f 9/00; G02b 5/22
U.S. Cl. 353—14 10 Claims



An aircraft head-up display is projected from symbol-markings borne by two complementary color filters superim-

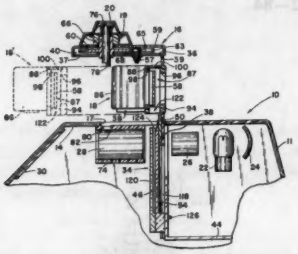
posed in the light-path from an electric lamp. An horizon-line marking of the first filter has the color of the second filter bearing a flight-vector marking, and vice versa, but either marking may be transparent. The filters are separately driven to follow aircraft movements with the symbol-images simulating the true horizon and flight-vector. A third filter with glide-slope marking may be carried adjustably with the first filter to allow modification of indicated glide-slope below the horizon.

3,679,298

CASSETTE-TYPE MICROFILM READER

Frederick G. Knowles, and Clarence R. Taylor, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,266
Int. Cl. G03b *23/12, 1/48*
U.S. Cl. 353—26 **13 Claims**



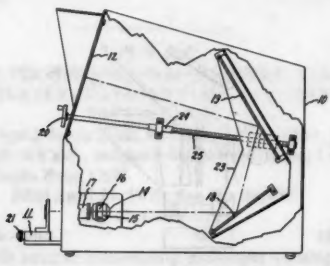
Apparatus for projecting images from an information bearing medium such as filmstrip extending between supply and takeup members in a cassette. The apparatus includes a carriage assembly for receiving the cassette in a first position and for moving the cassette to a second position in which the filmstrip is aligned for projection and in which a two-way drive mechanism is engaged to the cassette supply and take-up members. Also, during movement to the second position, a focusing control mounted on the carriage assembly is coupled with a projection lens focusing device in the reader projection system. The projection apparatus further includes a relatively stationary film gate for supporting the filmstrip in a predetermined projection plane, and the cassette containing the filmstrip is adapted to envelop the film gate as the cassette is inserted into the projection apparatus by the carriage assembly.

3,679,299

METHOD AND APPARATUS FOR OPTICAL PROJECTION OF DEFORMATION IMAGES

James F. Burgess; Robert F. Kopczewski, and John M. Holeman, all of Schenectady, N.Y., assignors to General Electric Company

Filed Dec. 20, 1968, Ser. No. 785,582
Int. Cl. G03b *21/06*
U.S. Cl. 353—67 **5 Claims**



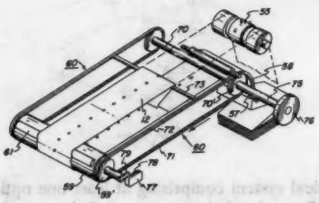
The optical projection of information stored in a relief image such as a pattern of surface deformation of a light reflecting medium is accomplished by a projector which images on a screen the foci of either of the two sets of mirrors produced by the curved surfaces of the deformations. The hollows or concave mirrors provided by the bottoms of the deformations have their foci in front of the recording and when imaged on a screen by the projection optics provide a bright line image on a light background. The convex mirrors at the edges of the deformations have their foci (virtual) located to the rear of the recording and when imaged on the screen by the projection optics provide a dark outline of the deformations on a light background. In the embodiment illustrated, the projector is a reader and is provided with a back projection screen at the same end of the reader as the recording to be projected and the projection path includes suitable mirrors for reversing the direction of the projected light.

3,679,300

LABEL PRINTING APPARATUS

Herbert C. Artelt, Jr., Wildwood, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed June 22, 1970, Ser. No. 49,209
Int. Cl. G03g *15/00*; G03b *1/56*
U.S. Cl. 355—3 **9 Claims**



Apparatus for electrostatically printing label information from cards on a web material. The apparatus includes card feeding means, means for electrostatically printing images from the cards on the web material, means to advance the web material in timed relation with the card feeding and the printing means; and means to thereafter fix the images. To enable the web material to be threaded into the apparatus from without, a web threading mechanism designed to follow the path followed by the web material to the image producing means and from there through the fixing means is provided, the threading means including a part to which the leading section of the web material may be attached. A remote operator for the threading means together with signaling means to indicate proper positioning of the web guide member following threading is included.

3,679,301

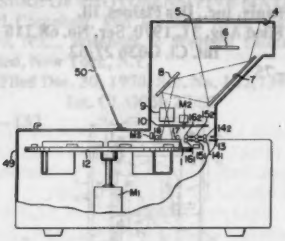
MULTICOLOR ELECTROPHOTOGRAPHIC DEVICE

Shozo Inoue, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1970, Ser. No. 41,365
Claims priority, application Japan, May 31, 1969, 44/51117
Int. Cl. G03g *15/00*
U.S. Cl. 355—4 **5 Claims**

An electrophotographic multicolor image reproducing device comprises a rotating type color separation means having a plural number of color separation filter, a means projecting a light image to the color separation filter, a means for fixing a photosensitive member to which a separated color image from the color separation filter is projected, a rotary disc hav-

ing a plural set of a charging means and a developing means, and a means for synchronizing the change of the color separa-



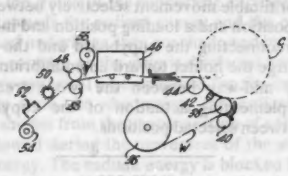
tion filter with the change of the set on the rotary disc and rotating discontinuously the rotary disc and the rotating type color separation means.

3,679,302

METHOD AND MEANS FOR REPRODUCING PRINTED MATERIAL

Frederic G. Ludwig, Woodbridge, Conn., assignor to Albert C. Nolte, Jr. and Gavin Gale Borden, New York, N.Y., a part interest to each

Filed Feb. 26, 1970, Ser. No. 14,473
Int. Cl. G03g *13/00*
U.S. Cl. 355—17 **7 Claims**



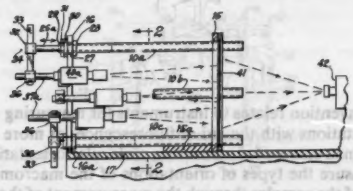
A method of reproducing printed material such as old and rare books, manuscripts and the like whereby a considerable savings in cost over known reprint methods is achieved. The reprints are of outstanding quality and are produced at a significantly higher rate than known methods. The process involves the use of an electrostatic copying machine utilizing roll paper, the copying machine having two fusing steps and a brushing step. The latter results in the virtual elimination of the random toner particles on the paper after the first fusing step has been achieved. Thus, a high contrast reproduction print is the result of the present process.

3,679,303

MULTI-PROJECTOR IMAGE COMPOSING HEAD

Laurence L. La Vant, 1144 Oak Ridge Drive, Glencoe, Ill.

Filed Feb. 16, 1971, Ser. No. 115,452
Int. Cl. G03b *21/26*
U.S. Cl. 355—40 **1 Claim**



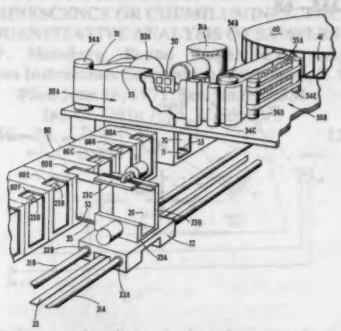
The invention discloses a structure wherein a plurality of projectors are provided to project on a common focal plane images arranged in desired relative size and position to provide a composite image on a focal plane. From the composite image photographic plates may be derived. The various projectors are mounted to permit independent operation of the various projectors along parallel laterally offset lines and makes possible arrangements of separate material for use in preparing a composite picture in desired form.

3,679,304

MICROFICHE REPRODUCTION SYSTEM

Albert Eng, Chestnut Hill, Mass., assignor to Foto-Mem, Inc., Natick, Mass.

Filed April 15, 1970, Ser. No. 28,751
Int. Cl. G03b *27/62, 27/70*
U.S. Cl. 355—41 **9 Claims**



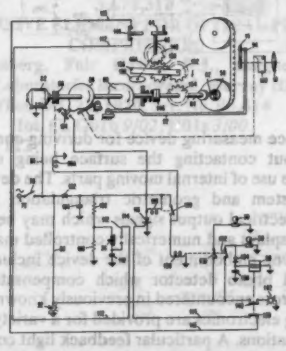
An automatic reproduction system which includes a cartridge storage bank for holding cartridges containing microfiche film cards. The cards are notch-coded to facilitate selection of particular cards. A command module controls the selection of a particular cartridge and further controls a cartridge retrieval and refile mechanism which transports the selected cartridge to a microfiche selector. A particular microfiche card is selected and transported to a reproduction station where a duplicate is made. After reproduction, the particular card returns to the cartridge and the cartridge retrieval and refile mechanism transports the cartridge to its position in the cartridge storage bank. The duplicate card is placed in rotary collator for further use. The individual microfiche selection is by forced air so as to protect the film surfaces of the cards within the cartridge from rubbing or scratching against one another.

3,679,305

MICROFILM RECORDING SYSTEM

John R. Hereford, Florissant, Mo., assignor to U.S. Dynamics Inc., Elmsford, N.Y.

Filed Aug. 15, 1969, Ser. No. 850,606
Int. Cl. G03b *27/32*
U.S. Cl. 355—65 **12 Claims**



The system uses a film cartridge containing film having positioning perforations, and it is operable in each exposure cycle

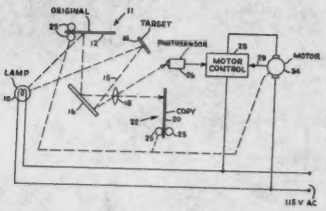
to advance the film before opening the shutter. An interlock is provided to prevent ambient light damage to film records at the cartridge exposure window.

3,679,306

FEEDBACK SYSTEM FOR CONTROLLING IMAGE LIGHT ENERGY IN ELECTROSTATIC PHOTOCOPIERS

Robert Clark Du Bois, Fairfield, and Wayne H. Miller, Stamford, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 21, 1971, Ser. No. 108,504
Int. Cl. G03b 27/78
U.S. Cl. 355—68 2 Claims



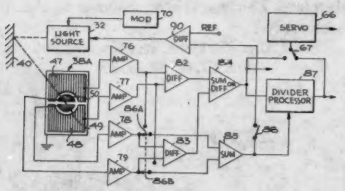
A control system for electrostatic photocopiers monitors the light level of a reference beam. The beam is projected at the imaging station from the projection lamp by way of the illuminating station and the image projection optics to derive a feedback signal for regulating either the copy sheet feed rate through the imaging station or the lamp current to compensate for lamp voltage variations, lamp aging, dirty projection optics, etc.

3,679,307

NON-CONTACTING OPTICAL PROBE

Robert Martin Zoot, Los Angeles, and James Leo Scieszinski, Canoga Park, both of Calif., assignors to ATI, Inc.

Filed Feb. 19, 1970, Ser. No. 12,575
Int. Cl. G01c 3/08
U.S. Cl. 356—4 42 Claims



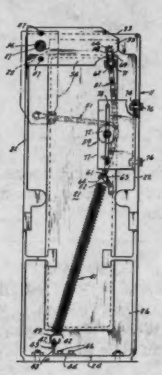
A distance measuring device for deriving contour information without contacting the surface being measured and without the use of internal moving parts. The device utilizes an optical system and geometric triangulation techniques to develop electrical output signals which may be used to drive readout displays and numerically controlled machine tools or the like. One embodiment of the device includes a specially configured photo detector which compensates for certain ranging errors encountered in previously known devices. Data processing electronics are provided for a variety of operations and applications. A particular feedback light control system is employed to compensate for variations in reflected light levels.

3,679,308

EQUILIBRATED COPYBOARD

Gerhard A. Nothmann, Wilmette, Ill., assignor to Robertson Photo-Mechanix, Inc., Des Plaines, Ill.

Filed Aug. 31, 1970, Ser. No. 68,118
Int. Cl. G03b 27/62
U.S. Cl. 355—75 4 Claims



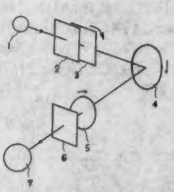
A pivoted holder for flat material such as a copyboard or similar device for use in a light exposure system is mounted on a support for tiltable movement selectively between an expose or process position and a loading position and includes elastic means interconnecting the copyboard and the support in a manner to urge the holder toward an equilibrium position approximately mid-way between the two extreme positions, thereby implementing actuation of the copyboard by an operator between selected positions.

3,679,309

INSTRUMENTS FOR MEASURING MOLECULAR ORIENTATIONS WITH THE AID OF FLUORESCENCE

Hideho Hiragaki, and Yoshihiro Mochida, both of Tokyo, Japan, assignors to Japan Spectroscopic Co., Ltd., Tokyo, Japan

Filed May 4, 1970, Ser. No. 34,106
Claims priority, application Japan, May 6, 1969, 44/34027; May 6, 1969, 44/34028; May 6, 1969, 44/34029; May 12, 1969, 44/35793; Oct. 30, 1969, 44/86453; Nov. 29, 1969, 44/95371; Dec. 1, 1969, 44/95739
Int. Cl. G01n 21/40; G01j 39/18
U.S. Cl. 356—114 13 Claims

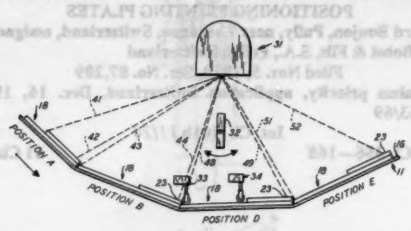


This invention relates to instruments for measuring molecular orientations with the aid of fluorescence, or more particularly to instruments for measuring molecular orientations that can measure the types of orientations of the macromolecular system of the samples through the measurement of the angular distribution of the intensity of the polarized components in the fluorescence emanated by the samples, by making use of the dual anisotropy exhibited when the light is absorbed and the fluorescence emitted, particularly with an eye to the anisotropy of fluorescent molecules dispersed among macromolecules.

3,679,310
METHOD OF PARTIAL SHUTTERING FOR EVEN EXPOSURE OF PHOTOSENSITIVE MATERIAL

Douglas Earl Campbell, and Richard Allen Harris, both of Greensboro, N.C., assignors to Western Electric Company Incorporated, New York, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,739
Int. Cl. G03b 27/02
U.S. Cl. 355—132 10 Claims



A method of uniformly polymerizing a circuit pattern on a strip of photosensitive material by displacing the strip relative to a radiant energy source while successively engaging each of a series of masks. Each mask is supported by one of a series of carriages mounted for movement about the radiant energy source. The leading end of each mask and underlying strip is shadowed by the frame of the supporting carriage as the strip is displaced towards the radiant energy and the opposite end of the mask and underlying strip are shadowed by the frame of the following carriage as the strip is displaced away from the radiant energy source. To compensate for the uneven exposure resulting from the shadowing, the radiant energy is blocked by a shutter from the center portion of each mask that is never shadowed during the movement of the strip through the radiant energy. The radiant energy is blocked for a period of time sufficient to uniformly polymerize the circuit pattern on the strip of photosensitive material.

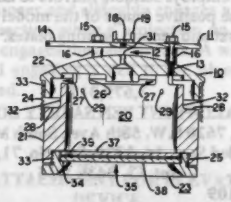
ERRATUM

For Class 356—4 see:
Patent No. 3,679,307

3,679,311
AMBIENT CONTAMINANT COLLECTING DEVICE

Harold A. Van Dusen, Jr., South Milwaukee, Wis., assignor to McGraw-Edison Company, Milwaukee, Wis.

Filed Feb. 11, 1971, Ser. No. 114,542
Int. Cl. G01n 1/18
U.S. Cl. 356—36 13 Claims

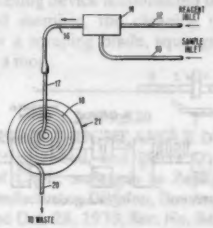


An ambient particulate density measuring device has a chamber for collecting solid particle contaminants precipitated from an air flow pumped by an omnidirectional venturi located at the top of the chamber. The venturi is formed between a cover plate positioned above a curved external top of the chamber having a hole at its center that extends into the chamber. The chamber has a wind and rain shielded air inlet and has a glass bottom of two sections with an internal section exposed to the contaminants precipitated within the chamber and an external section exposed to contaminants outside the chamber. The bottom is removable so that transmission of light through the two pieces may be measured to give a determination of both particulate density within the chamber and ambient contaminant effects on the external section.

3,679,312
METHOD AND APPARATUS FOR MEASURING BIOLUMINESCENCE OR CHEMILUMINESCENCE FOR QUANTITATIVE ANALYSIS OF SAMPLES

Hyman P. Mansberg, Pound Ridge, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed June 16, 1971, Ser. No. 153,536
Int. Cl. G01n 1/00, 21/38, 1/10
U.S. Cl. 356—36 12 Claims

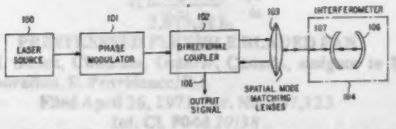


Method and apparatus for the quantitative determination of an ingredient of a fluid sample by the degree of luminescence created when the sample is reacted with another substance. The apparatus includes a photometer having a planar light-receiving window and a conduit providing a sinuous passageway portion formed in a body having its axis lying in a plane parallel to the photometer window and in proximity thereto and constructed of a transparent material. The sinuous passageway portion effectively obscures the window and is of substantially the same overall area. This conduit has an outlet portion at one end of the sinuous passageway portion and has an inlet close to or in the other end of the sinuous passageway portion. A sample and a reagent flow together and are intermixed in close proximity to the sinuous passageway portion, and are fed into the aforementioned inlet for flow into and through the aforementioned sinuous passageway portion for a luminescent reaction therein. A device is provided for receiving a signal from the photometer and for recording the results of the analysis.

3,679,313
DISPERSIVE ELEMENT FOR OPTICAL PULSE COMPRESSION

Robert Rosenberg, Fair Haven, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Oct. 23, 1970, Ser. No. 83,414
Int. Cl. G01b 9/02; H01s 3/00
U.S. Cl. 356—112 10 Claims



An interferometer cavity defined by two mirrors of different reflectance is advantageously adjusted to achieve superior

compression of optical pulse signals. In particular, a mirror of predetermined partial reflectance is juxtaposed with a mirror of substantially total reflectance, the separation distance being detuned by a calculated amount from a condition of resonance with the optical pulse input. The detuning distance is calculated in terms of the physical characteristics of the cavity and certain delimiting characteristics of the optical pulse signals.

3,679,314

APPARATUS FOR OPTICALLY TESTING THE GENUINENESS OF BANK NOTES AND OTHER TOKENS OF VALUE

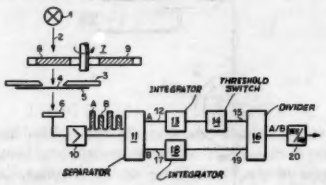
Rudolf Mustert, Oberwill/Zug, Switzerland, assignor to Landis & Gyr, Zug, Switzerland

Filed June 1, 1970, Ser. No. 41,837

Claims priority, application Switzerland, June 12, 1969, 9030/69

Int. Cl. G06k 9/08; G01j 3/50

U.S. Cl. 356—71 **3 Claims**



Apparatus for optically testing the genuineness of bank notes and the like by successively illuminating a selected portion of a note with light beams having different spectral distributions and then detecting the light transmitted through or reflected by the illuminated portion with a light sensitive device such as a photo cell. The output of the photocell is separated into two signals corresponding to the different spectral distributions and the ratio of the two signals is formed. An evaluating circuit is used to decide whether the ratio falls within predetermined limits and, if so, the note is treated as genuine.

3,679,315

APPARATUS FOR MEASURING THE LIGHT PASSING THROUGH A LIQUID SAMPLE IN A CLOSED FLEXIBLE WALLED CHAMBER

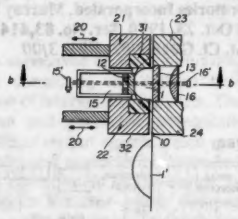
Robert Laucournet, L'Hay-Les-Roses, and Pierre Turpin, Burs S/Yvette, both of France, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed Aug. 25, 1970, Ser. No. 66,747

Claims priority, application France, Sept. 9, 1969, 6930619

Int. Cl. G01n 21/24

U.S. Cl. 356—180 **7 Claims**



A device for measuring a concentration of a liquid sample in a flexible chamber for containing the sample where a portion of the chamber is defined by a measuring zone including, an operating station having a photometer where pressurizing force means are applied to the chamber to alter the chamber configuration forcing the liquid sample into the chamber area at the measuring zone causing intimate contact with a pair of spaced fixed plates of the photometer to provide for a predetermined sample thickness for measurement purposes.

3,679,316

METHOD AND APPARATUS FOR OPTICALLY POSITIONING PRINTING PLATES

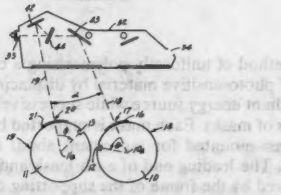
Gerard Boujon, Pully, near Lausanne, Switzerland, assignor to J. Bobst & Fils, S.A., Prilly, Switzerland

Filed Nov. 5, 1970, Ser. No. 87,209

Claims priority, application Switzerland, Dec. 16, 1969, 18663/69

Int. Cl. G01b 11/24

U.S. Cl. 356—168 **11 Claims**



The positioning of printing plates on a support means for synchronized color printing wherein successive impressions of various colors or images are to be superimposed is accomplished by the method according to the invention wherein a model having a positive image of the matter to be printed is placed in position on a first support means, a first color printing plate having a reversed image of the matter to be printed is placed on a second support means, the model and the first printing plate are viewed through an optical device situated in predetermined relation to the first and second support means so that with adjustment of the first printing plate the model and the first printing plate will appear in superimposed relation to each other. The model is then removed from the first support means and a second printing plate having a reversed image is mounted on the first support means and again adjusted in position so that when viewed through an optical device the images on the first and second printing plates will appear in superimposed relation to each other. Subsequent printing plates may be aligned in a manner similar to that set forth for the second printing plate. The apparatus for carrying out this method includes a pair of cylinder means mounted on a frame means in predetermined relation to each other and connectable to each other by a coupling means to rotate together in the same or opposite directions. An optical viewing means fixed in predetermined relation to the axis of the cylinder means employs suitable mirrors to allow superimposition between the positive image of the model and the negative images of the first and second printing plates.

3,679,317

BALL-POINT PEN SAFETY LOCK

Ivar G. Larson, 7620 S.W. 58th Ave., South Miami, Fla.

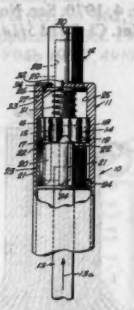
Filed Sept. 14, 1970, Ser. No. 71,725

Int. Cl. B43k 5/16

U.S. Cl. 401—109 **7 Claims**

Mechanism for locking an ordinary retractable writing element ball-point pen to prevent inadvertent or accidental depression of the actuating plunger is described. The locking mechanism comprises an elongated abutment member extending longitudinally of the outside of the pen actuating plunger and normally overlying, at its lower end, a solid wall portion at the upper end of the pen housing, resilient means

normally rotatively constraining the plunger so that the abutment members is in such overlying position, and a recess in the upper end of the pen casing, rotatively removed from the solid



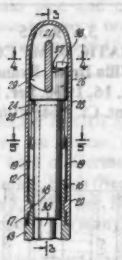
wall portion at the upper end of the pen, permitting manual depression of the actuating plunger only after the plunger is first turned from its normal or locking position to a position whereat the abutment member can pass through the recess.

3,679,318

PROPEL AND REPEL BALL POINT PEN MECHANISM

Thomas A. Liguori, Pelham Manor, N.Y., assignor to Modern Mold & Tool Corp., Bronx, N.Y.

Filed Jan. 18, 1971, Ser. No. 106,996
Int. Cl. B43k *24/06*
U.S. Cl. 401—110 **7 Claims**



A retractable pen includes a barrel with relatively rotatable upper and lower sections. An axially movable plunger is located in the upper and lower sections and is provided with a top cam section having a top face with a peripheral helical cam surface terminating in an upper horizontal dwell section. The cam surface extends for less than 360° and terminates in stop shoulders at both ends. A vertical protruding rib is formed on the plunger and slideably engages a vertical slot in the barrel lower section while a projection on the upper section of the barrel engages the cam surface. A writing cartridge has its upper end engaging a well in the plunger and is upwardly spring urged.

3,679,319

CLEANING ATTACHMENT FOR ELEVATED SPRAY DEVICE

Eugene A. Munchel, and Henry M. Thornton, both of York, Pa., assignors to Ashcombe Products Company, Dover, Pa.

Filed Jan. 13, 1971, Ser. No. 106,049
Int. Cl. A47l *1/08*
U.S. Cl. 401—138 **9 Claims**

A cleaning attachment for an elevated spray device in which a U-shaped bail supports an aerosol spray container in position to be discharged at elevated locations such as in the eaves of buildings, high windows, and the like. The attachment comprises a U-shaped member having legs adapted to be connected to the legs of the U-shaped bail by readily connectible

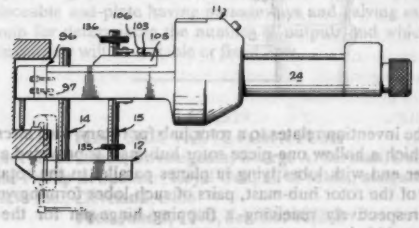
means, and a cleaning device is connected to the bight portion of the U-shaped member, the cleaning means comprising selectively either a scraping blade, squeegee blade, brush of suitable type, or a mop.

3,679,320

PORTABLE RIGHT ANGLE DRILL

Luis Bohorquez, Inglewood, and Pierre G. Vindez, Redondo Beach, both of Calif., assignors to Zephyr Manufacturing Co., Inc. - Manufacturing Division, Los Angeles, Calif.

Filed Oct. 28, 1970, Ser. No. 84,731
Int. Cl. B23b *47/18*
U.S. Cl. 408—99 **14 Claims**



A portable drill with two gear trains driven by a single motor wherein one gear train rotatably drives a drill spindle and a pair of feed spindles through a connection that permits axial movement of the spindles, and the other gear train drives the pair of feed spindles through threaded connections therewith. The feed spindles carry a footplate adapted to be clamped to the work. Means is provided for changing the gear ratios of one gear train and other means provided for selectively stopping either gear train in order to advance and retract the feed spindles at different speeds.

3,679,321

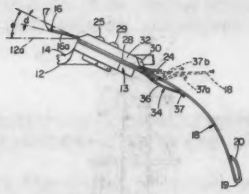
PRESTRESSED FLEXIBLE BLADED FAN

Karl H. Strick, Chatham, Ontario, Canada, assignor to Fran Corporation, E. Providence, R.I.

Filed April 26, 1971, Ser. No. 137,123
Int. Cl. F04d *29/38*
U.S. Cl. 416—132 **8 Claims**

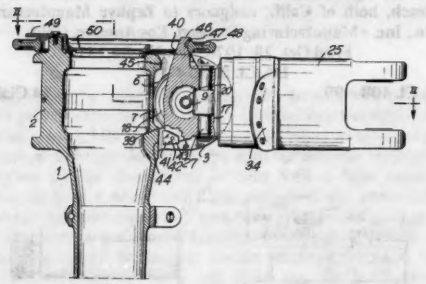
A fan having a hub, a plurality of arms extending radially outwardly of the hub, blades, one secured to each arm, which

decamber as rotational speed increases, and biasing members, one connected to each arm contacting the associated blade



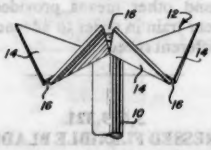
and urging such blade member toward its decambered position and thereby prestressing said blade member.

3,679,322
ROTOR HUBS ON ROTARY WING AIRCRAFT
Rene Louis Mouille, Bouches-Du-Rhone, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France
Filed May 27, 1970, Ser. No. 40,823
Claims priority, application France, May 28, 1969, 6917323
Int. Cl. B64c 27/40
U.S. Cl. 416—141 **4 Claims**



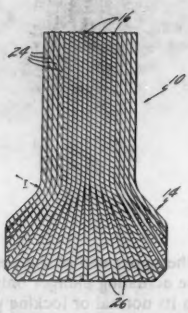
The invention relates to a rotor hub for rotary-wing aircraft, in which a hollow one-piece rotor hub-mast is provided at its upper end with lobes lying in planes parallel to the rotation axis of the rotor hub-mast, pairs of such lobes forming yokes for respectively receiving a flapping hinge-pin for the associated blade.

3,679,323
MIXING AND DISPERSING DEVICE
Barry L. Buck, 414 N. Lawndale, Chicago, Ill.
Filed Feb. 25, 1971, Ser. No. 118,742
Int. Cl. B01f 7/24
U.S. Cl. 416—183 **4 Claims**



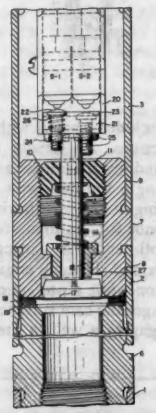
A mixing and dispersing device in which an elongated shaft has connected thereto a rigid blade which undulates about a plane that is perpendicular to the shaft, to form a plurality of sub-blades a number of which are at a positive angle of attack and an equal number of which are at a negative angle of attack.

3,679,324
FILAMENT REINFORCED GAS TURBINE BLADE
Hans Stargardter, Bloomfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Dec. 4, 1970, Ser. No. 95,232
Int. Cl. F01d 5/14
U.S. Cl. 416—229 **6 Claims**



A filament reinforced gas turbine engine blade having a divergent root defined by a particular splay radius comprising oriented high modulus, high strength nonductile first reinforcing filaments embedded in a matrix and forming a radius of curvature greater than the splay radius and no smaller that its working radius, and oriented high strength ductile second reinforcing filaments embedded in a matrix and forming a radius of curvature which is equal to or less than the splay radius with no loss of strength therein.

3,679,325
AUTOMATIC PUMP CONTROL
Clyde E. Yost, 700 S. Villa Drive, Evansville, Ind.
Filed Sept. 16, 1970, Ser. No. 72,568
Int. Cl. F04b 49/00
U.S. Cl. 417—17 **1 Claim**



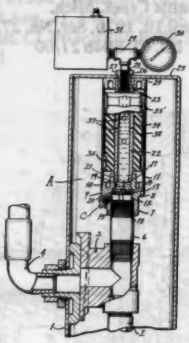
An automatic pump control for oil wells and the like is provided with a pair of pressure sensitive electrical switches which are activated by pressure of fluid within the well. One of the switches is closed at a relatively low pressure and the other switch is closed at a relatively high pressure and these switches are incorporated in a circuit which actuates a pump when the fluid within the well reaches a predetermined high level and deactivates the pump when the fluid within the well reaches a predetermined low level.

3,679,326

PUMP CONTROL

Anthony V. Weber, St. Louis County, Mo., assignor to Weber Industries, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 862,711, Oct. 1, 1969, Pat. No. 3,563,671. This application Oct. 19, 1970, Ser. No. 81,802
Int. Cl. F04b *49/02, 49/06, 49/08*
U.S. Cl. 417—38 3 Claims



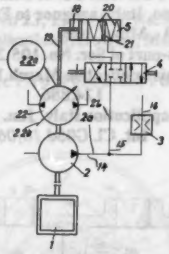
A pump control for use within a pump system and being connected to the discharge pipe therefor; there being a check valve between the pump control and the outlet pipe. Said control comprises a pipe having a plurality of openings which pipe connects said valve and a pressure switch in circuit controlling relationship with respect to the pump with a pressure accumulator disposed about said pipe and constituting a resilient sleeve having a thickness of about one-half inch and a durometer hardness within the range of 55 to 70.

3,679,327

HYDRAULICALLY REGULATED DRIVE

Josepf Riedhammer, Horb am Neckar, and Fritz-Jorg Glaser, Muehlen am Neckar, both of Germany, assignors to Bruninghaus Hydraulik GmbH, Horb (Neckar), Germany

Filed March 3, 1970, Ser. No. 15,987
Claims priority, application Germany, March 4, 1969, P 19 10 915.015
Int. Cl. F04b *1/26*
U.S. Cl. 417—222 10 Claims



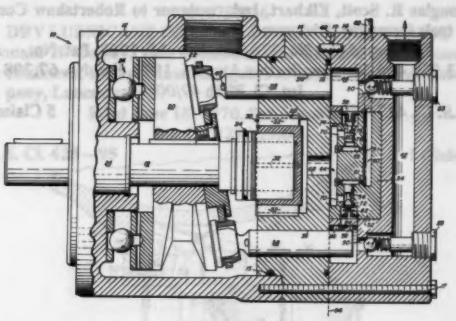
A hydraulic transmission drive comprising a combustion engine, a main pump, and a hydraulic motor, is regulated by adjusting the output of the main pump by regulating means including a hydraulic motor and a regulating pump driven by the combustion engine and driving the regulating motor. An adjustable throttle means is connected with the outlet conduit of the regulating pump and influences the operation of the regulating motor so that when the main pump has an overload, its speed is reduced together with the speed of the combustion engine until the torque of the combustion engine is sufficient.

3,679,328

VARIABLE PRESSURE SENSITIVE PUMP

Hamish A. G. Cattanach, Teddington, England, assignor to Applied Power Industries, Inc., Milwaukee, Wis.

Continuation of Ser. No. 738,050, June 18, 1968, abandoned. This application March 27, 1970, Ser. No. 20,875
Int. Cl. F04b *49/00*
U.S. Cl. 417—270 5 Claims



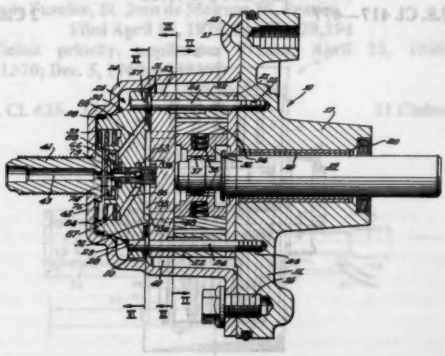
An axial pump having the capability of providing a plurality of independently adjustable fluid flows wherein there is an orifice network for returning adjustable amounts of pumped fluid from each piston to the inlet chamber depending on detected control pressures. A series of poppets are spring biased across orifices and the poppets adjust the open orifice period depending on the detected control pressures. The pump uses segmented bearings for its cam plate in combination with the aforesaid variable flow capacity. The pump further includes the use of a divided barrel wherein one portion houses reciprocating pistons and the other portion consists of a replaceable end-plate having passageways and valving means therein for determining the number of outputs and which of these outputs will be variable or fixed flow.

3,679,329

FLAT SIDE VALVE FOR A PUMP

Gilbert H. Drutchas, Birmingham; George A. Berman, Detroit, and Phillip B. Spencer, Royal Oak, all of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed June 8, 1970, Ser. No. 44,268
Int. Cl. F04b *49/00*
U.S. Cl. 417—300 6 Claims



Two confronting relatively movable radial surfaces formed by a stationary pressure part and a movable valve part respectively, have an axially projecting circumferentially continuous

shoulder formed on one of the parts and disposed between the surfaces to partition the space between the two parts into an inlet zone and an outlet zone. The valve part is moved axially as a function of fluid flow to by-pass fluid directly across the shoulder into the inlet zone from the outlet zone.

3,679,330

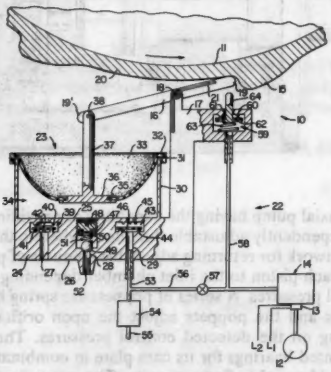
PNEUMATIC CONTROL SYSTEM AND PARTS THEREFOR OR THE LIKE

Douglas R. Scott, Elkhart, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 776,224, Nov. 15, 1968, Pat. No. 3,550,404. This application Aug. 26, 1970, Ser. No. 67,208

Int. Cl. F04b *49/00*

U.S. Cl. 417—306 **5 Claims**



This disclosure relates to a laundry machine wherein the rotating laundry confining drum or tub is operatively interconnected to a vacuum pump to cause continuous operation of the vacuum pump during the entire movement of the confining means so as to provide a source of vacuum for controlling vacuum operated actuators of the apparatus. In addition, a pneumatically operated timer controlling the "on-off" operation of the laundry machine is repetitively actuated and deactuated by the movement of the laundry confining means.

3,679,331

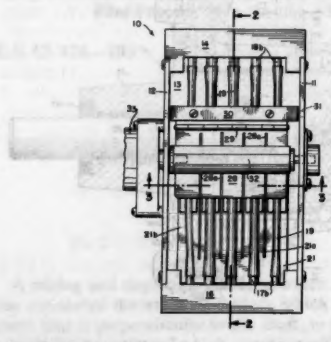
METERING PUMP AND VALVE

Jack Kushner, Lindenhurst, N.Y., assignor to Delta Scientific Corporation, Lindenhurst, N.Y.

Filed April 24, 1970, Ser. No. 31,686

Int. Cl. F04b *43/08*

U.S. Cl. 417—477 **2 Claims**



A metering pump and valve combination is disclosed wherein means are provided for pumping discrete quantities of fluid such as might be used as samples for analysis. The pump includes a resilient tube which is flexed in a traverse direction in a manner which precludes exceeding the elastic limit of the tube.

3,679,332

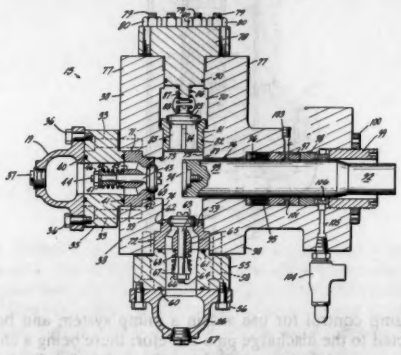
RECIPROCATING PISTON PUMP

Reinhard A. Yohpe, Battle Creek, Mich., assignor to Union Pump Company, Battle Creek, Mich.

Filed April 10, 1970, Ser. No. 27,330

Int. Cl. F04b *21/00*

U.S. Cl. 417—503 **9 Claims**



A reciprocating high-pressure pump assembly is provided, having a housing, a piston reciprocably mounted in a cylindrical chamber of the housing, and an outlet port and valve assembly mounted at the upper part of the housing. A pair of inlet port and valve assemblies are additionally mounted in the housing, one substantially coaxially with the piston, and the other substantially coaxially with the outlet valve, and in a lower portion of the housing. This structure, because it utilizes two inlet valve assemblies, permits inlet valves and housings to be utilized of considerably reduced dimensions, thereby greatly increasing the trouble-free operating time of the pump without reducing pumping capacity, and additionally permitting a plurality of pump assemblies to be mounted side by side in closer relationship than is possible with prior art pumps.

3,679,333

PACKING FOR AIR COMPRESSOR VALVE

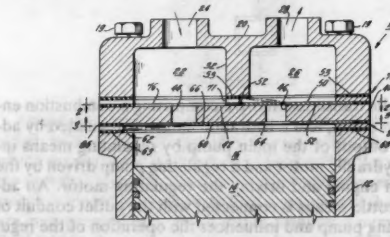
Bruno Zoppi, Milano, Italy, assignor to Fabbrica Italiana Magneti Marelli S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 105,263, Jan. 12, 1971, abandoned. This application March 16, 1971, Ser. No. 124,886

Claims priority, application Italy, Jan. 12, 1970, 19251

Int. Cl. G05d *16/06*

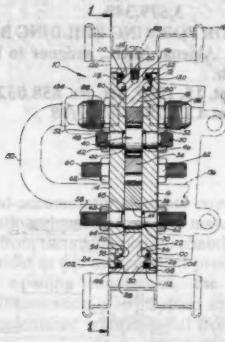
U.S. Cl. 417—571 **7 Claims**



In an air compressor, including flapper type blade valves over the inlet and outlet bores of the compressor, the inven-

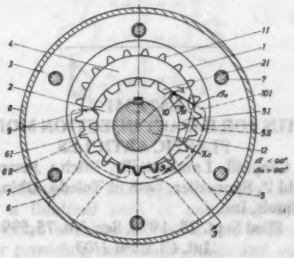
tion is an improved packing for mounting the captured end of each blade valve. Each packing is comprised of a wide, rigid, metal sheet and two thin layers of yieldable material on opposite surfaces of the sheet. The blade is in a recess of and has the same thickness as one of the thin layers.

3,679,334
FLUID POWER UNIT
Walter Keldrauk, 21500 Lassen St. 0149, Chatsworth, Calif.
Filed Aug. 21, 1970, Ser. No. 65,836
Int. Cl. F03c *3/00*; B60k *3/00*
U.S. Cl. 418—142 11 Claims



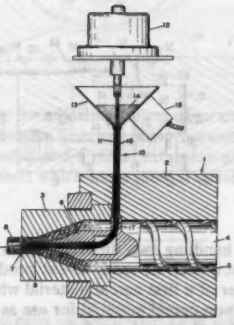
A rotary, fixed displacement fluid motor or pump. In a particular embodiment, an axially short, compact fluid power unit is provided utilizing roller bearings integrally disposed in angular contact between the annular bearing surfaces of a central rotor and axially juxtaposed side plates. The rotating rim of the central rotor is exposed and designed to accept a tire tim on its periphery and to replace and fit within the space used by the conventional wheel hub and brake assembly of a vehicle. Alternatively, a pulley rim can be superannularly disposed on the central rotor rim. In another embodiment, the power unit components are encased in a housing and power is transmitted via a rotating shaft journaled in extensions through the housing.

3,679,335
GEAR PUMP
Christof Zippel, Buchschachweg, and Manfred Ill, Markdorf, both of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany
Filed March 23, 1970, Ser. No. 21,931
Claims priority, application Germany, March 21, 1969, P 19 14 444.6
Int. Cl. F01c *1/10*; F03c *3/00*; F04c *1/06*
U.S. Cl. 418—170 4 Claims



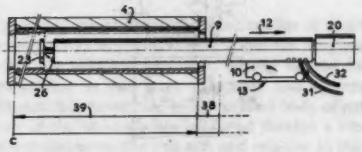
A gear pump having a power rotated pinion and an internal gear effecting positive displacement is provided including a filler or diverter element intermediate the toothed pumping elements for the purpose of directing flow into the recesses between the teeth of the rotative pinion from the suction side of the pump. Such diverter component insures filling of the recesses and avoids turbulence and cavitation thereby substantially decreasing pump noise, particularly at high speeds.

3,679,336
DRY LUBRICANT COATING OF EXTRUDED TUBING
Donald H. Bagley, East Freetown, and Richard L. Erickson, Braintree, both of Mass., assignors to Armstrong Cork Company, Lancaster, Pa.
Filed June 18, 1970, Ser. No. 47,360
Int. Cl. B29d *23/04*
U.S. Cl. 425—95 1 Claim



A dry lubricant is applied to the interior surface of an extruded tubing to assist in the placement of the tubing on piping. As the tubing is emerging from the extruder, mica powder is sprayed on the inside of the tubing. The mica powder is placed on the inside of the tubing by a rotating feed structure which forces the powder into the interior of the tube. A vibrating hopper is used to hold the mica powder in a nonpacked state. The apparatus is particularly useful with an in-line extruding head.

3,679,337
MANUFACTURE OF PLASTIC ARTICLES
Claude Fuseller, St. Jean de Moirans 38, France
Filed April 16, 1970, Ser. No. 29,194
Claims priority, application France, April 18, 1969, 6911370; Dec. 5, 1969, 6942262
Int. Cl. B29c *5/00*
U.S. Cl. 425—130 11 Claims



Apparatus for manufacturing hollow plastics articles using a centrifugal mould. A polymerizable mixture of accelerated

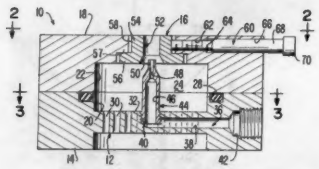
and catalysed resins is introduced into the mould through two or more nozzels, the component resins of the mixture being fed through separate nozzels. The jets of resin issued from the nozzels are directed to a rotary disc mounted at the forward end of a reciprocating arm bearing the nozzels. The arm is movable into and out of the mould by means of a carriage. Various internal mould configurations may be provided for the production of articles of different section.

3,679,338

APPARATUS FOR FORMING FILLED FOOD PRODUCTS

Roger J. Lutz, Fremont, Mich., assignor to Gerber Products Company, Fremont, Mich.

Filed June 11, 1970, Ser. No. 45,451
Int. Cl. A21c 11/16
U.S. Cl. 425—131 2 Claims



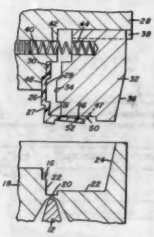
Apparatus for handling two different materials forming a filled food product, such as ready-to-eat product having an outer tubular layer of a first cereal material which encloses a core of a second non-cereal material for use as a filler for the tubular layer. A first die directs the first material into a confining chamber and a second material into the region within the first material. A second die provides for extrusion of the first material with the second material therewithin. Means is provided to adjustably mount the second die so that dies of different configurations and sizes can be used.

3,679,339

MOLD HAVING A SLIDE PLATE FOR FORMING ARTICLES HAVING A PROJECTION OR RECESS

Archie J. Tucker, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,210
Int. Cl. B29f 1/14
U.S. Cl. 425—242 5 Claims



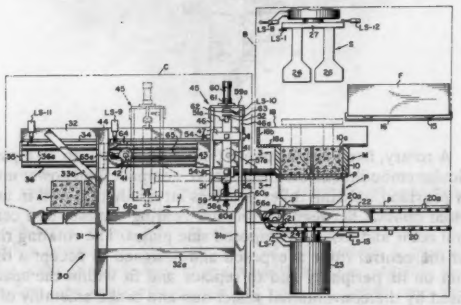
Apparatus for molding plastic articles. The apparatus includes a cavity piece, a force piece, and a slide plate which cooperate to define a molding cavity of the shape of the article to be molded. The slide plate is provided with a cavity to form a projection on the article and a camming surface which forms a recess in the molded article adjacent the projection. The slide plate during stripping of the article from the mold moves in a direction normal to the direction of the projection whereby the camming surface cams the article away from the slide plate to strip the projection from the cavity.

3,679,340

APPARATUS FOR FORMING BUILDING BLOCKS

Thomas W. Springs, Alpena, Mich., assignor to Besser Company, Alpena, Mich.

Filed Sept. 15, 1969, Ser. No. 858,032
Int. Cl. B28b 1/08, 7/18
U.S. Cl. 425—163 17 Claims



An apparatus for forming a building block, having conventional vertically extending, upwardly opening block cavities with a longitudinally extending channel in its lower surface. The block is made in a vibrated mold box assembly open at its upper and lower ends and a pallet is movable into position to form a removable mold cavity closing bottom wall for the assembly. A longitudinally removable core, which is resiliently mounted on a core adapter so that it can vibrate with the mold box assembly, is moved from a removed position to a position beneath the mold cavity and the pallet is then moved vertically to sandwich the core between the mold and pallet. After cementitious material is introduced into the mold cavity to form the block and the assembly is vibrated, the core is removed, and the block and pallet are then vertically stripped from the mold assembly and moved away for further processing.

3,679,341

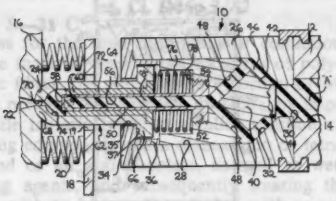
APPARATUS FOR IMPACT INJECTION MOLDING OF PLASTIC ARTICLES

Harold W. Graybill, Lambertville, Mich.; James E. Heider, and Harold P. Sponseller, both of Toledo, Ohio, assignors to Owens-Illinois, Inc.

Filed Sept. 25, 1970, Ser. No. 75,599
Int. Cl. B29f 1/03
U.S. Cl. 425—244 6 Claims

An apparatus and method for injection molding or impact molding from a source of plasticized material at a pressure in-

dependent of the source pressure. The apparatus includes a piston freely floating in an accumulation chamber to which material is supplied at source pressure, as by an extruder, and a valving nozzle through which the piston expresses material at a different pressure. The actuating force is generated by relative source-mold closing movement and is transmitted by the mold-contacting nozzle to the piston to sequentially



establish mold-accumulator chamber communication, isolate the accumulation chamber from the material source, and inject material from the accumulation chamber through the nozzle into the mold at the independent pressure. Upon relative source-mold opening movement, the mold-accumulator chamber communication is interrupted and the accumulation chamber is replenished with material from the source at the source pressure.

3,679,342

DIPPING FORM FOR MAKING SKIN-TYPE ARTICLES FROM PLASTIC MATERIAL

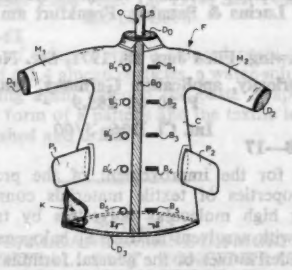
Jean Henri Roger Fougeray, 11 rue Charles Floquet, Rueil-Malmaison, and Louis Henri Jules Giffard, 33 rue de la Mission Marchand, 92 Courbevoie, both of France

Filed June 8, 1970, Ser. No. 44,497

Claims priority, application France, June 6, 1969, 6918731

Int. Cl. B28b 21/46

U.S. Cl. 425—275 **1 Claim**



In the manufacture of skin-type articles by dipping a hot former into a fluidized bath of powdered thermoplastic material, adhesion of said material on said former is locally prevented for providing neat edges, holes and other discontinuities in the article and thus facilitating the stripping of the former and avoiding any need of manual intervention for finishing the article.

3,679,343

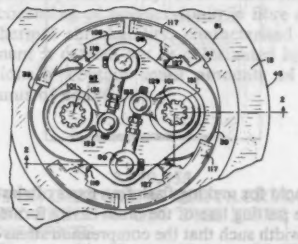
EXTRUSION MILL WITH ROLLER ADJUSTMENT MEANS

Robert W. Gilman, San Francisco, Calif., assignor to California Pellet Mill Company, San Francisco, Calif.

Division of Ser. No. 652,539, July 11, 1967, Pat. No. 3,559,238. This application May 4, 1970, Ser. No. 46,577

Int. Cl. B29f 3/012

U.S. Cl. 425—331 **4 Claims**



An apparatus for adjusting rollers of an extrusion mill comprising an adjustable link extending between a drive post in the roller assembly and a radial extension arm secured to the roller journal shaft which has a journal center eccentric of its roll center.

3,679,344

APPARATUS FOR PRODUCING MOLDED BODIES OF ROTATION BY ROLLING

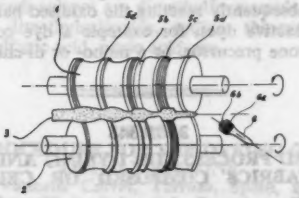
Lajos Balint, Feldkirch/Vorarlberg, Austria, assignor to Hilti Aktiengesellschaft, Schaan Furstentum, Liechtenstein

Division of Ser. No. 690,212, Dec. 13, 1967, Pat. No. 3,494,990. This application Aug. 5, 1969, Ser. No. 862,121

Claims priority, application Austria, Dec. 16, 1966, 7 A 11630/66

Int. Cl. B29d 7/10

U.S. Cl. 425—366 **6 Claims**



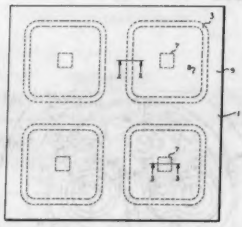
In an apparatus for producing molded bodies of rotation by rolling from blanks, the blanks are conducted longitudinally through the gap between two rolls having helical molding profiles extending in the same direction and approaching steadily the desired end profile of the molded body of rotation. At least one of the two rolls has imparted thereto a vibratory motion perpendicular to the roll axis and relative to the other roll, and this vibratory movement has a frequency of more than 50 cps, with the frequency being dependent on how great a reduction of the cross section is necessary. The amplitude of the vibratory movement is preferably up to about 2 mm.

3,679,345

FLASHLESS COMPRESSION MOLD

William J. Malutich, Edinboro, Pa., assignor to Continental Rubber Works, Erie, Pa.

Filed Aug. 20, 1970, Ser. No. 65,466
Int. Cl. B29c 1/14, 3/00
U.S. Cl. 425—406 5 Claims



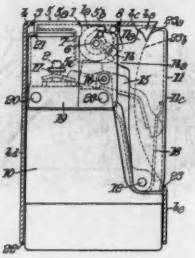
A metal mold for making flash free parts of elastomer. The mold has the parting line of the mold cavity formed by a narrow land of width such that the compression stress on the land does not exceed the elastic limit of the metal and all flash is squeezed outside the land so that the land always closes in metal-to-metal contact. Supplemental projections in the plane of the land may be provided to carry some of the load so that the pressure on the land does not exceed the elastic limit of the metal.

3,679,346

LIGHTERS, ESPECIALLY GAS LIGHTERS

Jacques Lambert, Paris, France, assignor to Societe Flaminaire
Marcel Quercia, Paris, France

Filed Sept. 10, 1970, Ser. No. 71,181
Claims priority, application France, Sept. 22, 1969, 6932213
Int. Cl. F23q 2/00
U.S. Cl. 431—130 10 Claims



The lighter comprises a burner, an ignition device and a push member which acts on the ignition device and on the burner fuel supply. The case of the lighter includes a port provided with a pivoting cover and actuated by the push member. In its resting position the push member reestablishes the parallelepipedic shape of the lighter.

CHEMICAL

3,679,347

DYEING HUMAN HAIR WITH A PEROXY COMPOUND AND A REACTIVE DYESTUFF

Frederick G. Brown, Cottingham, England, assignor to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 521,797, Jan. 20, 1966. This application Jan. 26, 1970, Ser. No. 8,010
Claims priority, application Great Britain, Jan. 25, 1965, 3,222/65
Int. Cl. A61k 7/12
U.S. Cl. 8—10.1 4 Claims

A process for dyeing human hair including the steps of (a) oxidising the hair with a peroxy acid or a salt thereof, such as the potassium triple salt of Caro's acid, and (b) subsequently reacting the oxidised hair with one or more reactive dyes, for example a dye containing a vinyl sulphone precursor, or a mono- or di-chlorotriazine group.

3,679,348

COMBINED PROCESS FOR DYEING AND FINISHING FABRICS COMPOSED OF CELLULOSIC FIBERS

Matahiko Asahi, Tokyo, Hisamichi Murakami and Yukio Hasegawa, Yokohama, Hideo Matsui, Kawasaki, and Eifu Takayanagi, Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

No Drawing. Filed Oct. 13, 1970, Ser. No. 80,466
Claims priority, application Japan, Oct. 14, 1969, 44/81,529
Int. Cl. D06p 5/00; D06m 9/00
U.S. Cl. 8—18 2 Claims

A process for effecting the dyeing and finishing of fabrics of cellulosic fibers simultaneously, which comprises applying a liquor containing at least one finishing agent selected from the group consisting of tetraoxane and pentoxane, an acid catalyst, and at least one dyestuff to a fabric of cellulosic fibers, and heat-treating the fabric.

3,679,349

REMOVAL OF POLYESTER OLIGOMERS WITH CHLOROFLUOROALKANES AND METHYLENE CHLORIDE TREATMENT OF POLYESTER FIBERS

Hans-Ulrich von der Eltz and Walter Birke, Frankfurt am Main, Wolfgang Kunze, Hofheim, Taunus, and Franz Schon, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,571
Claims priority, application Germany, Jan. 20, 1970, P 20 02 285.9
Int. Cl. D06p 5/00
U.S. Cl. 8—17 7 Claims

Process for the improvement of the processing and dyeing properties of textile materials consisting of or containing high molecular polyesters by treating these materials with a solvent mixture of halogenated methane or ethane derivatives of the general formula

R—F

in which R represents a radical of the formula

FCl_2C—$CFCl$—

or Cl_3C—, and methylene chloride, containing both the components in a weight ratio of from 30:70 to 70:30, preferably of from 45:55 to 55:45.

3,679,350

PROCESS FOR THE DYEING OF TEXTILE MATERIALS MADE FROM MIXTURES OF POLYESTER AND CELLULOSIC FIBRES

Rudolf Lowenfeld, Buchschlag, and Hans Kaiser, Offenbach am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 6, 1970, Ser. No. 35,301
Claims priority, application Germany, May 14, 1969, P 19 24 803.4
Int. Cl. D06p 3/82
U.S. Cl. 8—21 C 6 Claims

Process for the semi-continuous or continuous dyeing of textile material made from mixtures of polyester and cellulosic fibres, the polyester fibre portion of which having been predyed with disperse dyestuffs, by impregnating said textile material with an alkaline solution containing a coupling component and a diazoamino or tetrazoamino compound or an anti-diazotate, as well as wetting and dispersing agents, and subsequently treating the textile material, without intermediate drying, with an acidic solution at temperatures of from 50° to 80° C. to achieve development of the dyestuff on the fibre.

3,679,351

ATTENUATION OF THERMAL RADIATION WITH PHOTOTROPIC DYES

Leonard Weissbein, Bridgewater Township, Somerset County, and Samuel James O'Brien, Dunellen, N.J., assignors to American Cyanamid Company, New York, N.Y.

No Drawing. Filed Dec. 7, 1961, Ser. No. 157,837
Int. Cl. D06p 1/18, 3/28, 3/44
U.S. Cl. 8—50 3 Claims

Objects, particularly cyanoethylated cellulose, cellulose acetate or nylon textile materials, are protected from the effects of incident, high intensity flash radiation by coloring them with certain phototropic azo dyes which upon exposure to said radiation exhibit a substantially instantaneous change to a white or colorless condition and which upon ceasation of exposure to said radiation revert rapidly to their original color.

3,679,352

METHOD OF PRINTING TEXTILES USING A PRINTING PASTE CONTAINING β-1,4 GLUCAN

Noriaki Mizuma, Tokyo, and Yuzo Yokota, Oi-machi, Iruma-gun, Japan, assignors to FMC Corporation, Philadelphia, Pa.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,066
Int. Cl. C09b
U.S. Cl. 8—62 6 Claims

A process of printing with a colored paste comprising finely-divided β-1,4 glucan particles, a water-soluble binder and a coloring agent wherein the paste is applied to a textile in the form of a pattern and the textile is subjected to steam, washed and dried.

3,679,353

DIRECT DYE, ALKANOLAMINE OR MOFPHOLINE, AND NEUTRAL SALT CONCENTRATE AND MILLING PREPARATION THEREOF

Clemens Streck, Loudonville, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed Oct. 30, 1969, Ser. No. 872,723
Int. Cl. C09b 67/00
U.S. Cl. 8—79 8 Claims

A method of preparing liquid dispersions of direct dyes. The method includes the steps of mixing a direct dye and a neutral salt with water and milling the resulting mixture to produce a pourable viscous liquid or paste.

3,679,354

PROCESS FOR THE MANUFACTURE OF HIGH BULK TEXTILE MATERIALS FROM POLYACRYLONITRILE

Dietrich Hildebrand, Odenthal, and Karl Neufang, Colonge, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 10, 1970, Ser. No. 62,654
Claims priority, application Germany, Aug. 16, 1969, P 19 41 706.2
Int. Cl. D06m 3/16
U.S. Cl. 8—130.1 5 Claims

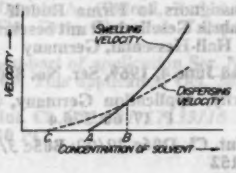
Process for the manufacture of high bulk textile materials of polyacrylonitrile by heat treatment of textile materials consisting of polyacrylonitrile fibre materials of different thermal shrinkability, characterised in that the heat treatment is carried out in chlorinated hydrocarbons which optionally contain small amounts of water and small amounts of emulsifiers.

3,679,355

METHOD FOR IMPROVING POLYACRYLONITRILE FIBER BY PEELING OFF THE FIBER SURFACE WITH SOLVENTS

Hiroyuki Yamaguchi, Kyoto, Katsuyoshi Tuji, Osaka, Kenji Maki, Kyoto, and Isoo Shimonishi, Sakai-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 10, 1968, Ser. No. 766,550
Claims priority, application Japan, Oct. 16, 1967, 42/66,079
Int. Cl. D06m 3/00; D06p 1/68, 3/70
U.S. Cl. 8—130.1 10 Claims



An acrylic fiber article is improved by treating it with a solution of a solvent having a concentration higher than that at which the solution begins to dissolve the fiber and lower than that at which the swelling velocity of the solution on the fiber surface is equal to the dispersing velocity of the surface of the swelled layer to peel the fiber. Examples of such solvent are dimethylformamide, dimethylacetamide, dimethylsulfoxide, sodium thiocyanate, zinc chloride, sulfuric acid, nitric acid, etc.

3,679,356

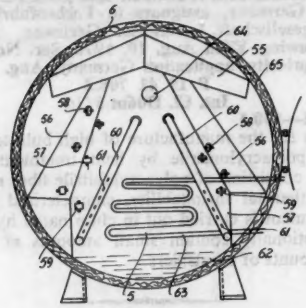
PROCEDURE FOR THE DYEING OF TEXTILE RIBBONS

Francisco Vancells Calvet, Tarrasa, Spain, assignor to Hilados y Tintes Soler, S.A., Barcelona, Spain

Filed May 1, 1969, Ser. No. 820,883
Claims priority, application Spain, Aug. 2, 1968, 356,806
Int. Cl. D06p 7/00
U.S. Cl. 8—149.1 5 Claims

A process for the dyeing of textile ribbons wherein the air is swept out of the ribbons and expelled prior to the dye fixing process. The moistened dyed ribbons are delivered to a tub which is positionable within a dye fixing chamber, the tub being heated by a heat source disposed below the tub. A dry vapor is supplied to the interior of the fixing chamber. The vapors within the fixing chamber are drawn downwardly into the tub and through the

ribbons contained therein, which vapors are drawn through the bottom of the tub and discharged to a location externally of the fixing chamber. The air contained



with the ribbons is also drawn downwardly and discharged externally of the dye fixing chamber. The dye fixing chamber is then heated to a predetermined temperature and maintained at this temperature for a predetermined time for fixing of the dye within the textile ribbons.

3,679,357

METHOD FOR WET TREATMENT OF ELONGATED TEXTILE MATERIAL

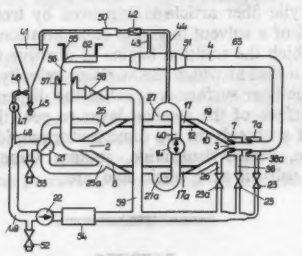
Wilhelm Christ and Peter Weissbach, Schwabisch Hall, Germany, assignors to Firma Rudolf Then, Farberimaschinenfabrik Gesellschaft mit beschrankter Haftung, Schwabisch Hall-Hessental, Germany

Filed June 4, 1969, Ser. No. 830,318

Claims priority, application Germany, June 6, 1968, P 17 60 576.4

Int. Cl. D06c *29/00*; B05c *3/04*

U.S. Cl. 8—152 **9 Claims**



A method of treating elongated textile material in a treatment vessel which has double walls, the inner wall being perforated; the treatment vessel having conical (or pyramidal) inlet and outlet sides, textile material being introduced at the inlet and removed, by suction, at the outlet side; the inner walls of the vessel are perforated, and treatment liquid introduced therein is removed alternately from one opposite lateral side, or the other, to set up cross currents of flow and bunch textile material, totally immersed in treatment liquid in the vessel; the removed liquid is re-introduced adjacent a portion of the outlet side by an injector nozzle, to additionally create a flow of liquid through a transport system which may be open, or closed.

3,679,358

PROCESS FOR THE DYEING OR PRINTING OF TEXTILE MATERIALS MADE FROM POLYMERS OR COPOLYMERS OF ACRYLONITRILE

Konrad Lohe and Reinhard Mohr, Offenbach, Main, and Eberhard Mundlos and Hermann Freb, Heusenstamm, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

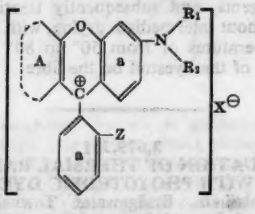
No Drawing. Filed July 27, 1970, Ser. No. 64,870

Claims priority, application Germany, Aug. 21, 1969, P 19 42 508.2

Int. Cl. D06p *3/70*

U.S. Cl. 8—177 AB **6 Claims**

Process for the dyeing or printing of textile materials made from polymers or copolymers of acrylonitrile, by using dyestuffs of the general formula



wherein R_1 and R_2 each stands for a hydrogen atom or optionally substituted lower alkyl group, Z represents a carboxylic acid ester group, A represents a phenylene radical which may contain non-ionic substituents optionally connected with one another to form a ring, but is free from amino groups, and $X^{\ominus}$ represents an anion and wherein the benzene nuclei *a* may contain further non-ionic substituents.

3,679,359

CONTINUOUS MANUFACTURE OF CUPROUS CHLORIDE

Erich Haberland and Werner Perkow, Hamburg, Germany, assignors to Norddeutsche Affinerie, Hamburg, Germany

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,907

Int. Cl. C01g *3/04*

U.S. Cl. 23—97 **3 Claims**

Continuous production of cuprous chloride by reacting metallic, preheated copper with chlorine gas in a melt of cuprous chloride and/or cupric chloride at a temperature between 500 and 700° C. and passing the hot cuprous chloride product through a permeable layer of metallic copper.

3,679,360

PROCESS FOR THE PREPARATION OF BRUSHITE CRYSTALS

Bernard Rubin, Belmont, and James D. Childress, Arlington, Mass., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

No Drawing. Filed June 26, 1970, Ser. No. 50,339

Int. Cl. C01b *25/32*; A61k *5/02*

U.S. Cl. 23—109 **3 Claims**

A process for the preparation of calcium phosphate salts wherein a calcium phosphate salt is deposited from a gel medium onto the surface of a tooth. The use of the gel diffusion process to deposit the constituents of tooth enamel onto the surface of a weak or damaged tooth and thereby effect repair of the tooth is disclosed.

3,679,361
PROCESS FOR ALUM CRACKING AND THE SO OBTAINED PRODUCTS

Giovanni Bonelli, Via Marchiondi 7, Milan, Italy

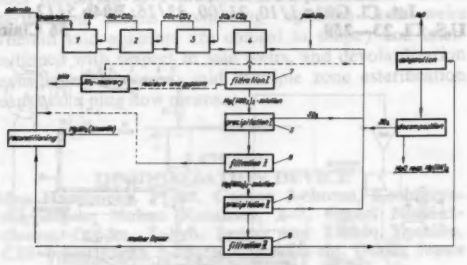
No Drawing. Filed Jan. 21, 1970, Ser. No. 4,765
Int. Cl. C01d 5/00; C01b 17/50; C01f 7/30
U.S. Cl. 23—121 18 Claims

A molten alum, is subjected to dehydration at a temperature of 95–300° C.—which can possibly be graduated in different percentages—and calcination, either in the same apparatus or in two different apparatuses, that is in a dehydrating and calcinating apparatus respectively; carrying out the operations preferably in a fluidized bed furnace and at a calcination temperature in a range of 575° C.–1200° C. Sulphur dioxide—from which sulphuric acid is successively prepared—alumina and alkali sulphates are obtained through the alum cracking thus effected.

3,679,362
PROCESS FOR MAKING MAGNESIUM OXIDE OR HYDROXIDE FROM MAGNESIUM CONTAINING RAW MATERIALS

Hellmut Hartmann, Braunschweig, and Gerhard Budan, Wathlingen, Celle, Germany; said Budan assignor to Hellmut Hartmann, Braunschweig, and Wintershall Aktiengesellschaft, Kassel, Germany

Filed Feb. 19, 1969, Ser. No. 800,592
Int. Cl. C01f 5/14, 5/16; C01b 17/48
U.S. Cl. 23—201 28 Claims



A substantially pure magnesia or magnesium hydroxide is obtained by proceeding in succession as follows:

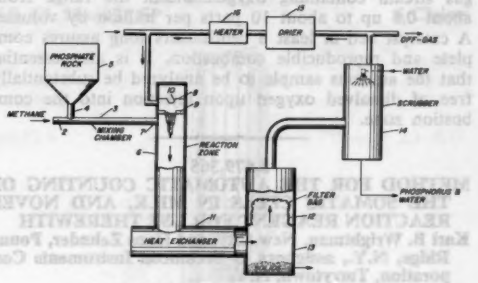
(a) treating a magnesium sulfate suspension of a magnesium containing raw material with sulfur dioxide to form a solution of magnesium bisulfite upon release of CO_2;
(b) separating the formed gypsum and insoluble residue from the said solution;
(c) converting the dissolved magnesium bisulfite to an insoluble neutral hydrate of magnesium sulfite that is substantially free of calcium;
(d) separating the hydrate from the mother liquor;
(e) dehydrating the said magnesium sulfite hydrate; and
(f) decomposing the sulfite to magnesium oxide or magnesium hydroxide while drawing off the sulfur dioxide.

3,679,363
PRODUCTION OF PHOSPHORUS

Joseph Francis Skrivan, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 15, 1970, Ser. No. 98,363
Int. Cl. C01b 25/02
U.S. Cl. 23—223 4 Claims

In a continuous process of making phosphorus by reduction of fine particulate phosphate rock while suspended as dilute solid phase in a gas stream which comprises hydrocarbon gas reducing agent, and wherein the phosphate rock and hydrocarbon reactants are heated together in said stream to reaction temperature in a reaction zone by hot plasma gas heated in a plasma generator, the invention provides the improvement wherein said plasma gas consists essentially of hydrogen and

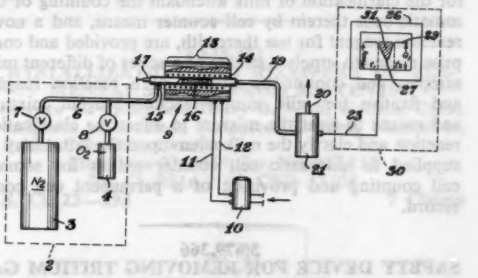


carbon monoxide recycled from the reactor product stream after removal of phosphorus and solids from said product stream. Preferred reaction temperatures are about 1600–3400° F. The preferred hydrocarbon is methane. The recycle gas can be preheated prior to final heating in the plasma generator.

3,679,364
DETERMINING THE LOW LEVEL OXYGEN DEMAND OF COMBUSTIBLE MATERIALS IN AQUEOUS DISPERSIONS

James L. Teal and Charles Eugene Hamilton, Midland, Mich., and Dennis A. Clifford, Bethel Park, Pa., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 452,809, May 3, 1965. This application Oct. 30, 1970, Ser. No. 85,516
Int. Cl. G01n 31/12, 33/18
U.S. Cl. 23—230 PC 5 Claims



A method for measuring oxygen demands of aqueous dispersions containing combustible material in the parts per billion range. The method broadly comprises the steps of flowing a feed gas stream composed of an inert gas containing a small amount of oxygen into a confined, heated combustion zone, at a constant rate. The feed gas stream is passed through a combustion supporting, porous catalyst bed contained within the combustion zone, which is heated to a combustion supporting temperature. The gas stream is then fed into a detector for measuring small amounts of free oxygen. A small aliquot of the aqueous dispersion to be analyzed is injected into the feed gas stream within the combustion zone upstream from the catalyst bed. The resulting gaseous products are swept along in the gas

stream from the combustion zone into an oxygen detector. The oxygen depletion in the gas stream is calibrated to yield a measurement of the oxygen demand of the aqueous dispersion.

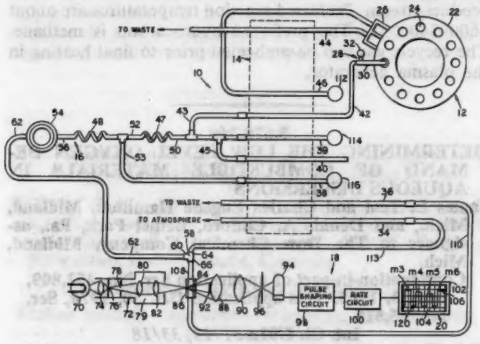
To achieve accurate measurements at low levels of oxygen demand, the method is operated with the feed gas stream containing oxygen within the range from about 0.5 up to about 10 parts per million by volume. A catalyst bed at least 8 centimeters long assures complete and reproducible combustion. It is also essential that the aqueous sample to be analyzed be substantially free of dissolved oxygen upon injection into the combustion zone.

3,679,365

METHOD FOR THE AUTOMATIC COUNTING OF THE SOMATIC CELLS IN MILK, AND NOVEL REACTION REAGENT FOR USE THEREWITH

Karl B. Wrightman, New City, and Hans Zehnder, Pound Ridge, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jan. 29, 1970, Ser. No. 12,515
Int. Cl. G01n *33/04*
U.S. Cl. 23—231 **20 Claims**



New and improved, automatic method and apparatus for the clarification of milk attendant the counting of the somatic cells therein by cell counter means, and a novel reaction reagent for use therewith, are provided and comprise means to supply a stream of a series of different milk samples and continuous streams of a reaction reagent and fixative for milk sample-reaction reagent mixture, and means to treat the mixture to effect the clarification reaction and clarify the milk whereupon the latter may be supplied to automatic cell counter means for somatic cell counting and provision of a permanent cell count record.

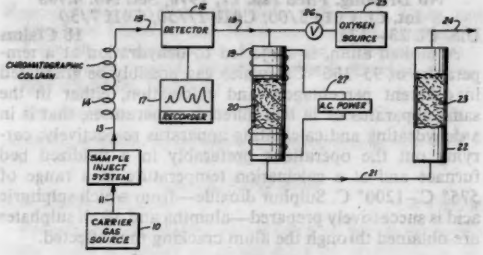
3,679,366

SAFETY DEVICE FOR REMOVING TRITIUM GAS FROM A GAS STREAM

Royal H. Benson, Texas City, and Robert J. Bodre, La Marque, Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 9, 1970, Ser. No. 1,630
Int. Cl. B01d *53/00, 59/28*
U.S. Cl. 23—254 R **23 Claims**

Safety device for removing tritium gas from flowing fluid streams comprised of a means to convert the tritium in the stream to a labile-tritium-containing compound and a trapping means connected to the conversion means such that the fluid stream upon exiting from the conversion means flows through the trapping means, the trapping means comprising a means to prevent the escape of the labile-tritium-containing compound to atmosphere. In a specific embodiment, the invention is a safety device for use in combination with gas chromatographic detectors of the electron capture type which employ a tritiated material as a source of beta radiation wherein the converter means is connected to the outlet of the detector and the trapping means, which in the preferred embodiment takes



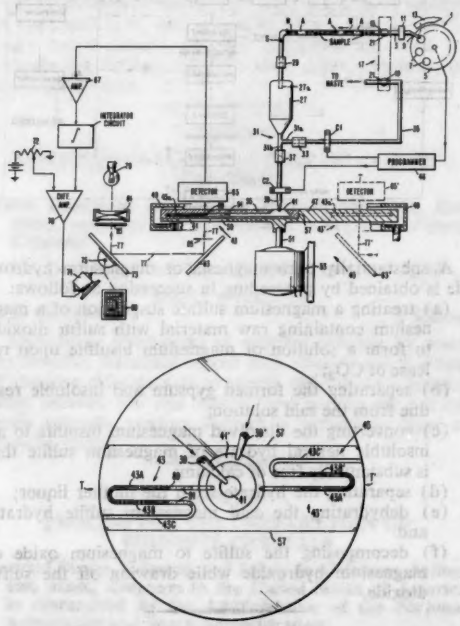
the form of a tritium-exchange means, is connected to the outlet of the converter means such that the tritium in the labile-tritium-containing compound is exchanged with labile hydrogen in the tritium-exchange means.

3,679,367

APPARATUS FOR DETERMINING THE PACK VOLUME OF PARTICULATES IN LIQUID MIXTURES

Kent M. Negersmith, Mahopac, and William J. Calogero, Hopewell Junction, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Sept. 14, 1970, Ser. No. 71,700
Int. Cl. G01n *1/10, 21/00, 33/16*; B04b *5/12*
U.S. Cl. 23—259 **56 Claims**



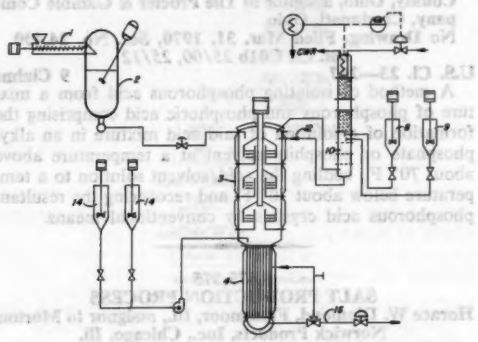
Blood samples are successively and centrifugally loaded into a same capillary chamber defined in a continuously rotating centrifuge head to measure the respective packed cell volumes. The capillary chamber is open-ended and has a serpentine configuration, i.e., it reverses upon itself, to trap and retain a fixed volume of each successive blood sample for centrifuging. The capillary chamber is purged of a packed blood sample by the introduction of a next successive blood sample.

3,679,368

CONTINUOUS POLYESTER POLYMERIZATION APPARATUS

Laszlo J. Balint and David W. H. Roth, Jr., Chester, and Orvill E. Snider, Petersburg, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 20, 1969, Ser. No. 867,726
Int. Cl. B01d *1/22*; C08f *1/98*
U.S. Cl. 23—263 2 Claims



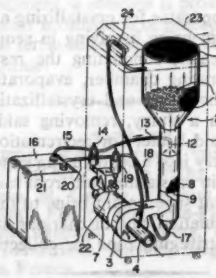
Apparatus for continuous esterification and polycondensation comprising a rectification unit having a feed outlet therefrom to a multiple zone, substantial vertical esterification means containing agitators and weirs (wherein said agitators are conical in shape) and interpositioned with respect to said weirs, and devolatilization means located between said multiple zone esterification means and a plug flow means.

3,679,369

DEODORIZATION DEVICE

Hideo Hashimoto, 17–22, Gamou 3-chome, Koshigayashi, Japan; Nobuo Kasahara, 2–7, Omori Nishi 1-chome, Ota-ku, Tokyo, Japan; and Toshio Yoshino, C10–6 Korigaoka 5-chome, Hirakata-shi, Osaka, Japan

Filed May 11, 1970, Ser. No. 36,262
Claims priority, application Japan, May 13, 1969, 44/36,175
Int. Cl. C01c *1/12*; B01d *53/34*
U.S. Cl. 23—284 3 Claims



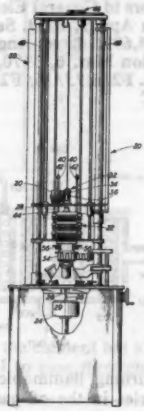
A deodorization device particularly adapted for use with ammonia process diazo copying machines includes an odor removing conduit having two odor removing sections, through which ammonia containing exhausts are caused to flow. A filler is provided in the first odor removing section, a deodorizing chemical being applied to the filler, while an ammonia adsorbent is provided in the second odor removing section, the ammonia containing exhausts flowing first through the first section and then through the second section.

3,679,370

CRYSTAL GROWER WITH EXPANDABLE CHAMBER

Joseph J. Czeck, Glen Lyon, and Raymond E. Reusser, Bethlehem, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed July 31, 1970, Ser. No. 60,052
Int. Cl. B01j *17/18*
U.S. Cl. 23—273 SP 6 Claims



A crystal grower has an expandable chamber formed of alternate bellows and flanges, which surround a portion of a rotatable seed shaft. As a crystal is drawn out of a melt at the end of the seed shaft, the bellows extend to expand the chamber at the same rate the shaft is moved. As a result, an increased length of crystal is achieved for a particular length of seed shaft. A shorter seed shaft results in a more compact grower which ultimately results in fewer crystal defects because of a decrease in probability of shaft run-out or wobble.

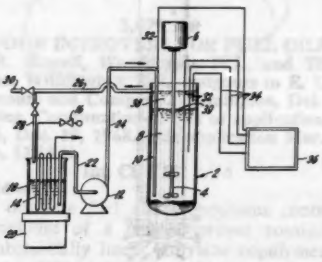
The chamber has externally mounted alignment members to withstand adverse environmental conditions which might otherwise cause distortion of the chamber.

3,679,371

CRYSTALLIZATION AND RECOVERY OF ELEMENTAL SULFUR FROM SOLVENTS

Lawrence C. Tisdel and Harry B. Scott, Golden, Colo., assignors to Brameda Resources Limited, Vancouver, British Columbia, Canada

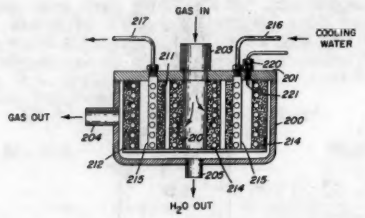
Filed June 27, 1969, Ser. No. 837,113
Int. Cl. B01d *9/02*; C01b *17/08*
U.S. Cl. 23—295 7 Claims



The process for the recovery of sulfur of controlled crystalline size from a solvent containing sulfur dissolved therein by a direct heat exchange relationship with a liquid, which is immiscible with said solvent. An immiscible liquid at a temperature different from that of the sulfur laden solvent is admixed directly therewith, mixed

to insure adequate heat exchange contact, allowed to layer and drawn off for recycle. A slurry of crystalline sulfur in the phase in which it is contained, is withdrawn, separated and recovered.

3,679,372
OFF-GAS BURNER SYSTEM
William A. Hartman, Jr., and Manny Siegler, San Jose, Calif., assignors to General Electric Company
Original application Apr. 9, 1969, Ser. No. 814,769, now Patent No. 3,598,699, dated Aug. 10, 1971. Divided and this application Mar. 6, 1970, Ser. No. 24,953
Int. Cl. F23d *13/16*; F23g *7/06*
U.S. Cl. 23—277 C **4 Claims**



A system for burning flammable gas including three porous plugs in series in the off-gas line. The first plug serves as an upstream flame arrestor in case of burner failure. The second porous plug serves as a burner with a flame ignition means adjacent the downstream face of the plug. The third porous plug serves as a downstream flame arrestor and condenser for the water vapor formed in the flame reaction. Each of the porous plugs includes internal cooling means to remove heat. Appropriate temperature sensing means and control means are provided to insure safe, reliable operation.

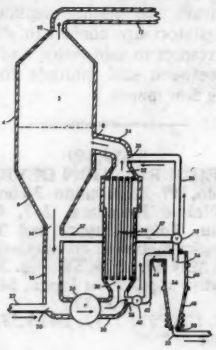
3,679,373
REACTOR FOR USE WITH FLUIDIZED BEDS
Raymond M. Vancamp, Pittsburgh, Pa., Paul S. Minor, New Martinsville, W. Va., and Albert P. Muren, Jr., Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Dec. 16, 1968, Ser. No. 783,788
Int. Cl. C07c *17/00*; B01j *9/20*
U.S. Cl. 23—288 L **19 Claims**

Apparatus suitable for containing fluidized bed reactions is described. The apparatus includes a reaction chamber and points for the admission of reactants to the reaction chamber located in at least two levels. Conduit ordinarily used for transferring heat from the reaction chamber is located in close proximity to the higher level. Preferably, most of the surface of the conduit is substantially vertical.

3,679,374
SEPARATION OF PHOSPHORUS ACID FROM MIXTURES OF PHOSPHORUS ACID AND PHOSPHORIC ACID BY CRYSTALLIZATION
William L. Kovacs, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Mar. 31, 1970, Ser. No. 24,400
Int. Cl. C01b *25/00, 25/12*
U.S. Cl. 23—297 **9 Claims**

A method of isolating phosphorous acid from a mixture of phosphorous and phosphoric acid comprising the formation of a solution of said acid mixture in an alkyl phosphate or phosphite solvent at a temperature above about 70° F., cooling the acid/solvent solution to a temperature below about 70° F. and recovering the resultant phosphorous acid crystals by conventional means.

3,679,375
SALT PRODUCTION PROCESS
Horace W. Diamond, Flossmoor, Ill., assignor to Morton-Norwick Products, Inc., Chicago, Ill.
Filed Sept. 4, 1970, Ser. No. 69,868
Int. Cl. C01d *1/30*
U.S. Cl. 23—303 **2 Claims**

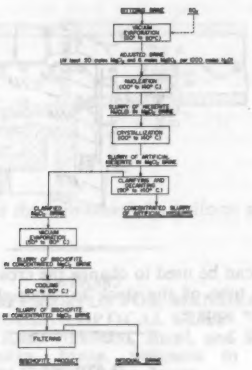


A process and apparatus for crystallizing and separating crystalline salt from brine involving in sequence heating said brine in a heater, conducting the resulting heated brine to an evaporating chamber, evaporating off water thereby causing nucleation and crystallization of salt in said brine to form a slurry, removing said slurry from said chamber to said heater for recirculation, bleeding a portion of said slurry into a centrifuging zone, centrifugally separating therein crystalline salt from said slurry, conducting the resultant supernatant brine to the evaporating chamber for recirculation, and discharging said crystalline salt from said centrifuging zone for collection.

3,679,376
PROCESS FOR REMOVING SULFATE FROM MAGNESIUM CHLORIDE BRINES CONTAMINATED THEREWITH
Hans Gerhard Flint and Ulrich E. G. Neitzel, Ogden, Utah, assignors to Great Salt Lake Minerals and Chemicals Corporation, Ogden, Utah
Filed Oct. 17, 1969, Ser. No. 867,336
Int. Cl. B01d *9/02*; C01f *5/30, 5/40*
U.S. Cl. 23—304 **9 Claims**

Magnesium chloride brines containing at least about 50 moles $MgCl_2$ and at least about 6 moles $MgSO_4$ per

1000 moles H_2O are heated rapidly to temperatures above about 100° C. to cause the formation of a substantial quantity of artificial kieserite nuclei. The resulting slurry



is held at high temperature (about 130° C.) until substantially all of the metastable sulfate in solution has crystallized therefrom.

3,679,377

IRON COMPLEXES CONTAINING AQUO, SULFATE AND HYDROXYL LIGANDS

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Feb. 17, 1970, Ser. No. 12,129

Int. Cl. C01g *49/00*

U.S. Cl. 23—315 **8 Claims**

An agronomically effective source of iron is provided in a plant nutrient solution as a soluble ferric sulfatohydroxyl complex anion. The solution is effective for foliar application to plants and is compatible with plant nutrients commonly used for fertilization such as ammonium nitrate and ammonium phosphate. Solutions containing the iron complexes have been observed to exhibit a greater agronomical effect on plants than exhibited by use of aqueous solutions of water soluble iron salts or chelates of iron using conventional chelating agents. In a specific embodiment, a solution is provided which is effective for the foliar fertilization of pineapple and which contains a soluble ferric sulfatohydroxyl complex dissolved in ammonium nitrate.

3,679,378

PROCESS FOR SEPARATING THE CORE OF A TUBULAR NUCLEAR FUEL ELEMENT

Jean Van Impe, St. Genese, Belgium, Pierre E. Chaussonnet, Sceaux, France, and Jean-Pierre M. Rombaux, Grimbergen, Belgium, assignors to ENI-L'Electro-Navale & Industrielle, Anvers, Belgium, and S.E.P.I., Saint-Denis, France

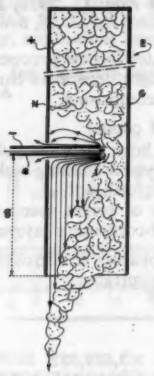
Filed July 9, 1969, Ser. No. 840,318

Claims priority, application Belgium, July 10, 1968, 158.676

Int. Cl. C22b *61/04*

U.S. Cl. 23—324 **10 Claims**

The electrically conductive outer cladding of a tubular element is separated from the inner core of the element by cutting the cladding electrochemically using an electrolyte and simultaneously leaching the core material out of the cladding by means of the electrolyte. The electrode used to effect the electrochemical cutting may be hollow and the electrolyte passed through it under pressure. The electrolyte may be of a nature which dissolves the core material. A screen beneath the tubular element catches



empty cut sections of the element but allows the electrolyte and the core material to pass through for collection.

3,679,379

MAGNETIC COMPOSITIONS

Fumio Okamoto and Yasuo Wada, Tokyo, and Kazuo Miyatani, Kanagawa, Japan, assignors to RCA Corporation, New York, N.Y.

No Drawing. Filed May 19, 1967, Ser. No. 639,647

Int. Cl. C01b *19/00;* H01f *1/00;* H01b *1/06*

U.S. Cl. 23—367 **4 Claims**

A new magnetic semiconductor material comprises the molar formula $CuCr_2Z_3Br$ where Z is sulfur or tellurium. The material is in the spinel crystal class and is useful in magnetic and semiconductor devices. A method of preparing the material comprises first mixing the starting materials, copper bromide, chromium and sulphur or tellurium in the molar ratios of 1:2:3. Then pressed pellets of the mixture are formed and placed in an evacuated quartz tube. The pellets are then fired for about 50 hours at about 800° C.

ERRATUM

For Class 29—199 see:
Patent No. 3,679,381

3,679,380

POUR IMPROVERS FOR FUEL OILS

Charles B. Biswell, Woodstown, N.J., and Thomas F. Johnston, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 785,376, Dec. 19, 1968. This application Mar. 1, 1971, Ser. No. 119,841

Int. Cl. C10l *1/16*

U.S. Cl. 44—62 **8 Claims**

Middle distillate fuel oil compositions containing an effective amount of a pour improver consisting of a soluble, substantially linear, ethylene copolymer consisting of, on a weight basis, 58 to 68% polymerized ethylene units, 32 to 42% polymerized propylene units, and up to 10% polymerized 1,4-hexadiene units, said copolymer having an inherent viscosity in tetrachloroethylene at 30° C. of about 0.1 to 0.45, a number average molecular weight of about 1,000 to 10,000 and a molecular weight distrbution of less than about 8.

3,679,381

NOVEL COMPOSITE

Hyman Chessin, Birmingham, Mich., assignor to M & T Chemicals Inc., New York, N.Y.

No Drawing. Filed Aug. 21, 1970, Ser. No. 66,146
Int. Cl. C23b 5/02, 5/06, 5/08, 5/18
U.S. Cl. 29—199 12 Claims

This invention relates to new processes and to a novel corrosion resistant bright decorative chromium composite metal coated article comprising:

(1) a first layer of copper;
(2) a second thin layer of bright cobalt thereon;
(3) a third thin layer containing nickel having a thickness of 2–12 microns; and
(4) a fourth layer of bright decorative chromium on said third nickel-containing layer

to form an article bearing a corrosion resistant bright decorative chromium surface.

3,679,382

THICKENED FUEL COMPOSITIONS AND METHOD AND MATERIAL FOR THICKENING SAME

William E. Cohrs, Midland, and Edward Stroiwas, Merrill, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 792,848, Jan. 21, 1969. This application Nov. 24, 1969, Ser. No. 879,552
Int. Cl. C10l 7/02
U.S. Cl. 44—7 D 17 Claims

Aliphatic fuel compositions such as gasoline, jet (turbine) fuel, diesel fuel and the like are thickened to decrease flammability hazards employing soluble polymers containing minor amounts of polar materials such as acrylic acid. Such fuel does not induce sulfidation on combustion.

3,679,383

PROCESS FOR THE MANUFACTURE OF SHAPED ARTICLES OF ZIRCONIUM CORUNDUM

Peter Hack, Ranzel, Troisdorf, Karl Hass, Niederkassel, and Georg Schinke, Ranzel, Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Continuation-in-part of application Ser. No. 757,452, Sept. 4, 1968. This application Feb. 17, 1970, Ser. No. 14,811
Claims priority, application Germany, Sept. 5, 1967, D 54,018
Int. Cl. C09c 1/68
U.S. Cl. 51—309 7 Claims

Process for manufacturing shaped articles of zirconium corundum which comprises shaping a fine grained eutectic mixture of low-silica bauxite and zirconium oxide, possibly in admixture with an organic binding agent and heating the shaped bodies in a reducing atmosphere at a temperature of 1250–1500° C. or in an oxidizing atmosphere at a temperature of 1400–1600° C.

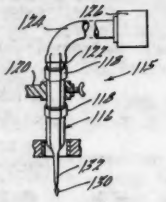
3,679,384

METHOD FOR FORMING A HONEYCOMB STRUCTURE

William B. Colson, Royal Oak, Herbert C. Niedermiller, Warren, and Bagdasar Deradoorian, Detroit, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed May 7, 1970, Ser. No. 35,379
Int. Cl. C03c 25/02
U.S. Cl. 65—4 10 Claims

A method for forming a honeycomb structure from glass tubes and the resulting article including arranging the tubes in a stack, heating the stack, and maintaining the interstitial spaces of the stack at a predetermined gas pressure no greater than that of the remainder of the stack, in order to radially expand the individual tubes of the stack and reduce the cross sectional size of interstitial spaces between tubes a predetermined amount. The



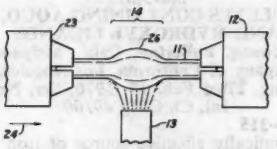
method can be used to change the cross sectional shape of a round tube of the stack to other shapes such as hexagonal or square.

3,679,385

MANUFACTURE OF INTERIOR COATED BULBS FOR HIGH TEMPERATURE GLASS LAMPS

Stephen P. Senft, Cleveland Heights, Ohio, assignor to General Electric Company

Filed Sept. 18, 1970, Ser. No. 73.500
Int. Cl. C03b 23/14; C03c 17/02
U.S. Cl. 65—60 6 Claims



An interior coated lamp envelope having a thick-walled bulbous portion is manufactured by first coating an interior region of a length of quartz tubing with a layer of boric oxide. This may be done by bubbling nitrogen gas through liquid trimethyl borate and feeding the resultant vapors, along with air, through the quartz tubing while rotating in a glass lathe and heating the region thereof which is to be formed into a thick-walled bulbous portion. While continuing the heating, the ends of the tubing are forced toward each other thereby forming a thick-walled bulbous portion and at the same time baking the deposited coating of boric oxide.

3,679,386

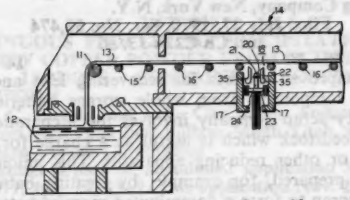
PROCESS AND APPARATUS FOR FORMING A METAL OXIDE COATING ON FLAT GLASS

Akira Kushihashi, Nishinomiya-shi, and Koji Ikeda, Tsushi, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed June 22, 1970, Ser. No. 48,334
Claims priority, application Japan, June 30, 1969, 44/52,058
Int. Cl. C03c 17/20
U.S. Cl. 65—60 8 Claims

Process and apparatus for forming a metal oxide coating on the surface of flat glass wherein a solution of a metal compound convertible to its oxide upon pyrolysis is sprayed from a nozzle uniformly on the surface of flat glass maintained at a temperature of 400° to 750° C. during its transfer towards a lehr, the spraying being performed within a spray chamber including the nozzle there-

in and defined by partition walls in order not to have the spray scattered in the direction of transfer of the flat glass.



The process ensures the formation of a uniform and compact coating.

3,679,387

METHOD AND APPARATUS FOR MANUFACTURING TUBULAR OPTICAL GLASS

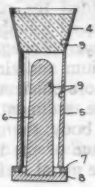
Tetsuo Kudo and Kozo Nakatani, Itami, and Kiyoyasu Koda, Nishinomiya, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of application Ser. No. 830,623, June 5, 1969. This application Dec. 1, 1971, Ser. No. 203,789

Claims priority, application Japan, June 17, 1968, 43/41,338

Int. Cl. C03b *9/04*

U.S. Cl. 65—105 **5 Claims**



An upstanding mold is divided into inner and outer sections which rest on a base including a ring member so as to form a reservoir at the bottom of the mold. The inner and outer molds have inclining surfaces so that the annular space between the molds increases from the base support to the top of the mold. A glass preform rests on top of the mold and is heated to cause the glass to melt and flow into the annular recess. The molten glass at the bottom of the mold collects in the reservoir thereby enabling the glass to flow freely down between the mold sections, thereby preventing bubbles and stria from forming. After the glass has cooled, the bottom is removed from the mold and the inner and outer molds withdrawn downwardly so as to free the glass cylinder.

3,679,388

TOUGHENING OF GLASS

David George Giddings, Stourbridge, and David Duncan Murphy, Leamington Spa, England, assignors to Pilkington Brothers Limited, Liverpool, England

No Drawing. Filed Dec. 30, 1969, Ser. No. 889,340

Claims priority, application Great Britain, Jan. 8, 1969, 1,262/69; June 24, 1969, 31,952/69

Int. Cl. C03b *27/00*

U.S. Cl. 65—116 **12 Claims**

Glass heated to a temperature near its softening point is toughened by heat exchange with an oil held at a temperature below the flash point of the oil, there being maintained in the oil a proportion from 0.01% to 0.07% by weight of a liquid having a boiling point lower than the flash point of the oil.

3,679,389

METHOD AND APPARATUS FOR THE MANUFACTURE OF FLAT GLASS

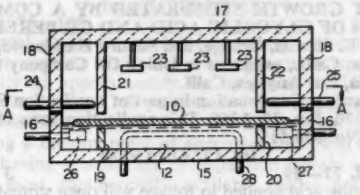
Eizo Kanai, Yokohama, Japan, assignor to Asahi Glass Co., Ltd., Tokyo, Japan

Filed July 8, 1970, Ser. No. 53,072

Claims priority, application Japan, July 15, 1969, 44/55,429

Int. Cl. C03b *18/00*

U.S. Cl. 65—99 A **9 Claims**



An improved float process for the manufacture of flat glass in which a glass ribbon formed in a forehearth is fed onto a molten metal bath and both edges of the ribbon are maintained at temperatures lower than that of a central portion of the ribbon, whereby the glass ribbon advances without a substantial change in thickness and is smoothed in the course of the advance.

3,679,390

SUSPENSION FERTILIZERS

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,955

Int. Cl. C05b *15/00*

U.S. Cl. 71—29 **8 Claims**

An aqueous, suspension fertilizer is described which contains up to about 75 weight percent insoluble solids that are present in the aqueous suspension at concentrations greater than their solubilities and are maintained in suspension by the presence of a calcium orthophophate gel. The compositions are prepared by admixing ammonium phosphate, the desired nutrient such as a potassium salt, urea source, ammonium salt, phosphate rock, acidulated phosphate rock, elemental phosphorus or sulfur, or a minor nutrient such as a salt of any of the trace metals, and then adding a soluble calcium salt to gel the mixture. The compositions are preferably prepared under highly turbulent conditions to insure intimate dispersion of the calcium salt gelling agent throughout the liquid before precipitation occurs. It has been found that the compositions prepared in this manner are highly thixotropic and resist settling under static or dynamic conditions. The compositions are prepared at a pH value from about 6.5 to about 7.4 where the maximum thixotropicity of the calcium orthophosphate precipitate can be achieved. In this fashion, maximum gelation is effected with the minimum quantity of the calcium salt.

3,679,391

FERTILIZER COMPOSITIONS

James Jack, Troon, and John Drake, Ardrossan, Scotland, David Crompton Thompson, Norton-on-Tees, England, and Frederick John Harris, Edinburgh, Scotland, assignors to Imperial Chemical Industries Limited, London, England, and Scottish Agricultural Industries Limited, Edinburgh, Scotland

Filed Apr. 18, 1968, Ser. No. 722,498

Claims priority, application Great Britain, Apr. 24, 1967, 18,781/67; June 7, 1967, 26,317/67

Int. Cl. C09k *3/00*

U.S. Cl. 71—64 E **9 Claims**

Fertilizer compositions, for example granular fertilizers containing ammonium nitrate or urea, having improved

free-flowing properties, resistance to caking and drillability, are provided with a coating comprising a silicon compound selected from silanes (exemplified by alkyltrialkoxy silanes) and organopolysiloxanes (exemplified by cyclic and linear alkyl hydrogen siloxanes) which are efficacious even when applied at room temperature.

3,679,392

PLANT GROWTH STIMULATED BY A COMBINATION OF GLYCOLIC ACID AND GIBBERELLIN

Robert E. Strauss, Orange, and Saburo Hashimoto, Yorba Linda, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of application Ser. No. 700,370, Jan. 25, 1968. This application June 18, 1969, Ser. No. 834,515

Int. Cl. A01n *9/28*

U.S. Cl. 71—89 **3 Claims**

Glycolic acid applied to foliage will open stomata pores and cause the plant to become desiccated. The glycolic acid also may be combined with known desiccants. In lower concentrations, the glycolic acid may be employed with systemics such as herbicides and gibberellic acid to aid their absorption and translocation by the plant.

3,679,393

ALKOXY-ALKYLAMINO-s-TRIAZINE HERBICIDES

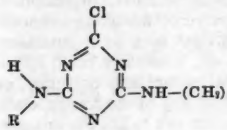
Daniel Bertin, Montrouge, and Jacques Perronnet, Paris, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Original application Nov. 13, 1968, Ser. No. 775,545, now Patent No. 3,551,421, dated Dec. 29, 1970. Divided and this application Aug. 20, 1970, Ser. No. 65,660

Int. Cl. A01n *9/22*

U.S. Cl. 71—93 **8 Claims**

Novel herbicidal compositions containing as the active ingredient at least one triazine of the formula



wherein R is lower alkyl of 1 to 7 carbon atoms and n and n' are 1 or 2 and and n'' is 0, 1 or 2 and novel methods of killing weeds.

3,679,394

METHOD FOR CASTING HIGH Ti CONTENT ALLOYS

William J. Buehler, Bethesda, Md., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Continuation-in-part of application Ser. No. 493,940, Oct. 7, 1965, now Patent No. 3,508,914, dated Apr. 28, 1970. This application Nov. 24, 1969, Ser. No. 879,622

Int. Cl. C22b *53/00*; C22d *7/06*

U.S. Cl. 75—10 **8 Claims**

Methods for forming and treating alloys containing (a) Ti and Ni, (b) Ti, Ni and Co, (c) Ti and Co, (d) Ti, Co and Fe, and (e) Ti and Fe which include preparing the alloys by induction melting techniques and purifying the alloys by contacting the molten alloy with carbon. The alloys are further cast in suitable graphite molds with the solidification process proceeding from the bottom toward the top of the mold.

3,679,395

PROCESS FOR RECOVERING LEAD, LEAD ALLOYS, AND LEAD COMPOSITIONS FROM BATTERIES

Frank C. Smyers, Munster, and John H. Garrison, Griffith, Ind., assignors to United States Smelting, Refining & Mining Company, New York, N.Y.

Filed July 27, 1970, Ser. No. 58,474

Int. Cl. C22b *13/00*

U.S. Cl. 75—77 **14 Claims**

The improved process for recovering lead and other metallic components from whole storage batteries and/or battery scrap generally involves the preparation of a unique feedstock which is useful as a charge for a blast furnace or other reducing apparatus. This unique feedstock is prepared, for example, by treating batteries or battery scrap to form a comminuted mass of battery particles, preparing a porous, pelletized bed of battery particles, and sintering the pelletized bed of battery particles for a time and under conditions sufficient to form an agglomerated sinter cake and to reduce or eliminate the sulfur content of the pelletized bed. The sinter cake is used alone or in combination with various other materials as a blast furnace charge.

3,679,396

MERCURY RECOVERY FROM SEDIMENT

Vernon A. Stenger, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Jan. 14, 1971, Ser. No. 106,559

Int. Cl. C22b *7/00, 43/00*; E02d *29/00*

U.S. Cl. 75—81 **6 Claims**

A method is provided for recovering mercury from sediment at the bottom of a body of water by overlaying the sediment with a layer of metal containing at least one of aluminum, magnesium and zinc. Preferably, the metal is in sheet form for more efficient interception of mercury vapor rising from the sediment. After removal of the metal from the water body, the mercury, which forms an amalgam on the surface of the metal, may be recovered by distillation from the metal surface.

3,679,397

BACTERIAL LEACHING PROCESS

Lawrence T. O'Connor, Tucson, Ariz., and James A. Brierley and Roshan B. Bhappu, Socorro, N. Mex., assignors to The Regents, New Mexico Institute of Mining and Technology, Socorro, N. Mex.

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,815

Int. Cl. B22b *3/00*

U.S. Cl. 75—101 **12 Claims**

A process for leaching metallic constituents from metallurgical materials and lixiviant composition therefor wherein the lixiviant solution contains ferrous sulfate, bacteria and carbamide phosphoric acid (urea phosphoric acid).

3,679,398

PROCESS FOR THE PREPARATION OF ACICULAR, SUBMICROSCOPIC, PERMANENTLY MAGNETIZABLE METAL PARTICLES

John W. Geus, Geleen, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands

Filed Mar. 20, 1970, Ser. No. 21,466

Claims priority, application Netherlands, Mar. 22, 1969, 6904453

Int. Cl. C22b *5/00, 23/00*

U.S. Cl. 75—108 **6 Claims**

The preparation of acicular cobalt-containing permanently magnetizable material is described wherein the pH value of a solution containing a cobalt salt and a ferrous salt, or a cobalt salt and a nickel salt or a combination of said three salts, is homogeneously increased at a con-

trolled temperature and with agitation, following which the resulting precipitate is then subjected to a reductive treatment in a separate liquid phase.

3,679,399
CONTINUOUS PROCESS TO PRECIPITATE HIGH PURITY COPPER POWDER FROM ACID LEACHING LIQUORS CONTAINING COPPER IN SOLUTION

Denton C. Linton, Salt Lake City, Utah, Andrew Zinkl, Prescott, Ariz., and Jack Ballam, Moab, Utah, assignors to Micro Copper Corporation

Continuation-in-part of abandoned application Ser. No. 841,477, July 14, 1969. This application Nov. 10, 1970, Ser. No. 88,465

Int. Cl. C22b *15/12*

U.S. Cl. 75—109 **6 Claims**

A method of precipitating copper powder continuously from an acid leaching liquor is disclosed comprising steps of adding aluminum powder to a copper pregnant liquor solution together with sodium chloride as a catalyst, the aluminum powder displacing and causing precipitation of most but not all the copper from the solution, the remaining copper being subsequently precipitated by interaction with aluminum ingots.

3,679,400
HOT DUCTILITY OF STEELS CONTAINING TELLURIUM

Elliot Simon Nachtman, Evanston, Ill., assignor to La Salle Steel Company, Hammond, Ind.

No Drawing. Filed Oct. 19, 1970, Ser. No. 82,090

Int. Cl. C22c *39/54*

U.S. Cl. 75—123 AA **15 Claims**

Minimizing the loss in ductility at elevated temperature resulting from the additions of tellurium to steels by providing the steels with rare earth metals in predetermined amounts with the tellurium.

3,679,401
SUPERCONDUCTIVE ALLOY AND PRODUCTION THEREOF

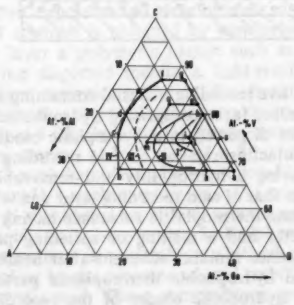
Alfred Müller and Arno Fink, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 26, 1969, Ser. No. 880,076

Claims priority, application Germany, Nov. 30, 1968, P 18 11 926.1

Int. Cl. C22c *27/00*

U.S. Cl. 75—134 V **5 Claims**



Intermetallic superconductor with composition

$V_xGa_yAl_z$

where $x+y+z=100$ and $68 \leq x \leq 87$; $5 \leq y \leq 31$ and $1 \leq z \leq 22$. Compositions can be formed in A2 lattice, machined to desired form and converted to A15 lattice.

3,679,402
PORCELAIN BONDING DENTAL GOLD ALLOY

Leo Hirschhorn, 4 Hartley Road, Great Neck, N.Y. 11023

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,866

Int. Cl. C22c *5/00*

U.S. Cl. 75—165 **1 Claim**

A dental gold alloy used for bonding to dental porcelains for capping teeth and similar purposes consisting essentially of approximately by weight of 67.7% gold, 11.6% platinum, 16.7% palladium, 1.3% ruthenium, 2% silver, .6% tin and .1% copper. The alloy is characterized in having a melting point of approximately 2400 degrees F. and having a coefficient of expansion closely approximating most commercially available dental porcelains, which may be adjusted for perfect compatibility. In addition, the alloy is relatively free of any tendency to gas, oxidize or discolor during baking, and is capable of greater elongation than prior art alloys.

3,679,403
METHOD OF IMPROVING MACROSTRUCTURE OF TITANIUM-BASE ALLOY PRODUCTS

Howard B. Bomberger, Jr., Canfield, and Stanley R. Seagle, Warren, Ohio, assignors to RMI Company, Niles, Ohio

Continuation-in-part of application Ser. No. 749,269, Aug. 1, 1968. This application May 5, 1970, Ser. No. 34,674

Int. Cl. C22c *15/00*

U.S. Cl. 75—175.5 **9 Claims**

A method of improving the macrostructure of titanium-base alloy products by adding to the alloy about 0.03 to 0.40 percent yttrium, which may be either the metal itself or a compound thereof. Addition of yttrium achieves a fine grain structure and avoids spangled surfaces on macroetched sections of the product, but usually lowers both the yield strength and ultimate tensile strength of the product. Invention compensates for this latter effect by adjusting the content of strengthening agents, preferably oxygen or nitrogen.

3,679,404
ZINC BASE CASTING ALLOY

Leslie J. Larrieu, San Marino, Calif., assignor to Morris P. Kirk & Son, Inc., Los Angeles, Calif.

No Drawing. Filed Feb. 8, 1971, Ser. No. 113,728

Int. Cl. C22c *17/00*

U.S. Cl. 75—178 AM **8 Claims**

Improved zinc base die casting alloys conforming to A.S.T.M. B86–64 AG40A with lowered magnesium contents that impart improved fluidity properties enabling lowered temperature die casting use and retaining dimensional stability and permanence of properties after aging.

3,679,405
ELECTROPHOTOGRAPHIC ELEMENT HAVING A SERIES OF ALTERNATE PHOTOCONDUCTIVE AND INSULATING LAYERS

Katsuo Makino and Iwao Sawato, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 26, 1968, Ser. No. 755,166

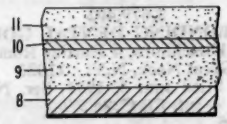
Claims priority, application Japan, Aug. 26, 1967, 42/54,679

Int. Cl. G03g *5/00, 7/00*

U.S. Cl. 96—1.5 **14 Claims**

An electrophotographic element is made having n photoconductive insulating layers and $n-1$ insulating

layers respectively interposed between said n photoconductive insulating layers, where $n=2, 3 \ldots i-1, i, \ldots N$. The photoelectric current generated in the



ith photoconductive layer is greater than that generated in the $(i-1)$th photoconductive layer, the $(i-1)$th layer being on the exposed side of the element.

3,679,406

HETEROGENEOUS PHOTOCONDUCTOR COMPOSITION FORMED BY LOW-TEMPERATURE CONDITIONING

Frederick J. Kryman, Batavia, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 13, 1970, Ser. No. 89,446
Int. Cl. G03g 5/00; H01l 13/00
U.S. Cl. 96—1.6 10 Claims

Heterogeneous photoconductive compositions are formed by first dissolving a dye in a solvent. After substantial dissolution of the dye, polymer and photoconductor are added to the dye solution to form a coating dope. The resultant dope is subjected to low-temperature conditioning by cooling to a reduced temperature and holding at that temperature for a period of time. The conditioned dope is then warmed to coating temperature, coated as a thin film and allowed to dry to form a heterogeneous composition containing submicron sized particles of a co-crystalline complex. Electrophotographic elements are formed by coating this dope on a support.

3,679,407

METHOD OF FORMING HETEROGENEOUS PHOTOCONDUCTIVE COMPOSITIONS AND ELEMENTS

Curtis L. Stephens, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 13, 1970, Ser. No. 89,447
Int. Cl. G03g 5/00
U.S. Cl. 96—1.6 10 Claims

A method of forming heterogeneous photoconductive compositions comprises the steps of forming a first solution of a carbonate polymer and a pyrylium dye, subjecting the solution to shearing action, preparing a second solution of pyrylium dye alone and combining the first and second solutions with an organic photoconductor and a polymeric binder different from the carbonate polymer, coating the resultant combination and drying.

3,679,408

HETEROGENEOUS PHOTOCONDUCTOR COMPOSITION FORMED BY TWO-STAGE DILUTION TECHNIQUE

Frederick J. Kryman, Hornell, and William J. Staudenmayer, Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 13, 1970, Ser. No. 89,448
Int. Cl. G03g 5/00; H01l 13/00
U.S. Cl. 96—1.6 10 Claims

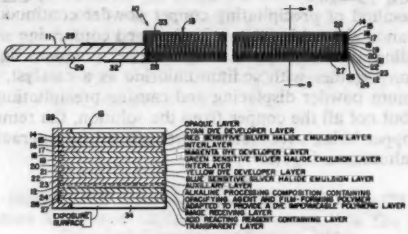
Heterogeneous photoconductive compositions containing dye and polymer are prepared by a two-stage dilution technique. The dye used is dissolved in a solvent at a dye/solvent ratio substantially equal to the solubility limit of the dye. Polymeric binder and photoconductor are added and the additional solvent is added to substantially reduce the dye/solvent ratio well below the solubility limit. Upon coating the resultant formulation, a high-speed heterogeneous composition results.

3,679,409

COLOR DIFFUSION TRANSFER PROCESSES AND ELEMENTS FOR USE THEREON WITH INCORPORATED IMAGE-FORMING MATERIAL IMPERMEABLE LAYER

Sheldon A. Buckler, Lincoln, Terry W. Milligan, Belmont, and Howard G. Rogers, Weston, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 867,583, Oct. 20, 1969. This application June 1, 1971, Ser. No. 148,349
Int. Cl. G03c 5/54, 1/48, 1/32
U.S. Cl. 96—3 52 Claims



OPAQUE LAYER
CYAN DYE DEVELOPER LAYER
RED SENSITIVE SILVER HALIDE EMULSION LAYER
INTERLAYER
MAGENTA DYE DEVELOPER LAYER
GREEN SENSITIVE SILVER HALIDE EMULSION LAYER
INTERLAYER
YELLOW DYE DEVELOPER LAYER
BLUE SENSITIVE SILVER HALIDE EMULSION LAYER
NEUTRALIZING LAYER
ALKALINE PROCESSING COMPOSITION CONTAINING OPACIFYING AGENT AND FILM-FORMING POLYMER ADAPTED TO PROVIDE A DIFFUSION IMPERMEABLE POLYMERIC LAYER
IMAGE RECEIVING LAYER
ACID REACTING REAGENT CONTAINING LAYER
TRANSPARENT LAYER
EXPOSURE SURFACE

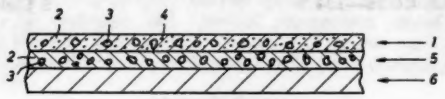
Diffusion of undesirable image-forming materials to the image-receiving element of a multicolor diffusion transfer photographic product is inhibited by incorporating in such product an image-forming material impermeable layer between the image-receiving element and the next adjacent silver halide emulsion layer subsequent to substantial image formation.

3,679,410

HEAT-SENSITIVE RECORDING MATERIAL

Marcel Nicolas Vrancken, Hove, and Daniel Alois Claeys, Mortsel, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

Continuation-in-part of application Ser. No. 608,571, Jan. 11, 1967. This application Nov. 23, 1970, Ser. No. 91,864
Claims priority, application Great Britain, Jan. 11, 1966, 1,350/66
Int. Cl. G03c 5/04
U.S. Cl. 96—27 48 Claims



A heat-sensitive recording material containing a thermosensitive recording layer comprising hydrophobic thermoplastic particles dispersed in a hydrophilic binder and in underlying contacting relation to said recording layer an underlayer having a hydrophility and removability with water less than that of said recording layer and which contains at least one thermoplastic substance having a hydrophobic character and a melting or softening point such that said substance remains adherent after heating to the heat coalesced hydrophobic thermoplastic particles contained in the hydrophilic binder of the recording layer.

According to a preferred embodiment the interlayer has been prepared from a latex containing polymer particles which coalesce on drying the coated layer at room

temperature. The interlayer may contain hydrophilic pigments such as colloidal silica and a hydrophilic binder that is preferably less soluble in water than the hydrophilic binder of the recording layer and the weight ratio of polymer particles relative to the hydrophilic binder is preferably at least 1:1.

3,679,411
NOVEL FRICTIONAL RESISTANCE MOTION PICTURE FILM
Robert K. Stephens, Burlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
No Drawing. Filed July 13, 1970, Ser. No. 54,613
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 **16 Claims**

Exposed motion picture film is processed with a developing composition containing a friction reducing agent to impart slip properties to the film thereby minimizing frictional resistance as the film contacts various mechanisms involved in transporting, storing and projecting film strips, thus minimizing a lack of uniformity in film transport rates and obviating damage to the film as a result of frictional resistance.

3,679,412
LITHOGRAPHIC PRINTING PLATES AND METHODS FOR PREPARATION THEREOF
William E. Guthrie and Anthony J. Parrinello, both of 1669 Lake Ave., Rochester, N.Y. 14650
No Drawing. Continuation-in-part of application Ser. No. 769,430, Oct. 21, 1968. This application May 4, 1970, Ser. No. 34,541
Int. Cl. G03c *7/02*
U.S. Cl. 96—33 **15 Claims**

Lithographic plates are prepared by (a) providing metallic support with gelatinous image; (b) treating the gelatinous image with an aqueous solution comprising dichromate, halide, and acetic acid; and (c) subjecting the treated image to heat.

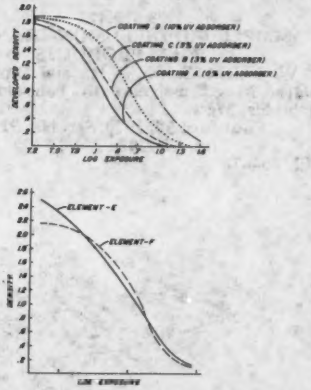
3,679,413
PHOTOGRAPHIC PROCESS WHICH PRODUCES NEUTRAL DYE IMAGE IN DIAZOTYPE MATERIAL
William C. Gray, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 657,077, July 31, 1967, now Patent No. 3,573,051 dated Mar. 30, 1971. This application Sept. 21, 1970, Ser. No. 74,230
Int. Cl. G03c *1/54, 1/58, 5/18*
U.S. Cl. 96—49 **6 Claims**

A two-component diazotype composition which provides, upon exposure and development, a neutral image with low contrast is obtained by employing as the light-sensitive layer a polymeric matrix such as cellulose acetate having dispersed therein a light-sensitive diazotype composition comprising (1) as the diazo component, a 2,5-dialkoxy-4 - morpholinobenzene diazonium salt, and optionally a 4-(dialkylamino)benzene diazonium salt; (2) as a blue coupler, at least one of a 2-hydroxy-N-(2-alkyl phenyl)-3-naphthamide, and a 2-hydroxy-N-(2,4-dialkoxy-5-halophenyl)-3-naphthamide; and (3) as a yellow coupler, an N-substituted or N,N-di-substituted 1-hydroxy-2-naphthamide or a 2-acylamido-5-alkylphenol. The diazotype composition is preferably stabilized against premature coupling by the presence of acid stabilizers such as 5-sulfosalicyclic acid. These compositions are conveniently processed by contact with an alkaline medium, such as one containing ammonia. Additionally, formulations containing the phenol coupler are advantageously processed by contact with high pressure anhydrous ammonia.

3,679,414
LITHOGRAPHIC PLATE AND METHOD
Joan M. W. Mukherjee, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Aug. 4, 1969, Ser. No. 847,393
Int. Cl. G03c *1/76, 3/00*
U.S. Cl. 96—67 **8 Claims**

A lithographic plate comprises a hydrophilic backing having an oleophilic solvent-removable coating which becomes solvent-resistant when heated in reactive association with an oxidizing agent. The coating comprises a polyphenolic reducing agent together with a lesser amount of chemically inert film-forming binder.

3,679,415
DIAZOTYPE PHOTOGRAPHIC ELEMENTS HAVING EXTENDED EXPOSURE LATITUDE WITH SPECIFIC U-V ABSORBER
James G. McNally, Jr., Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 18, 1969, Ser. No. 842,906
Int. Cl. G03c *1/60, 1/52, 1/58*
U.S. Cl. 96—68 **4 Claims**

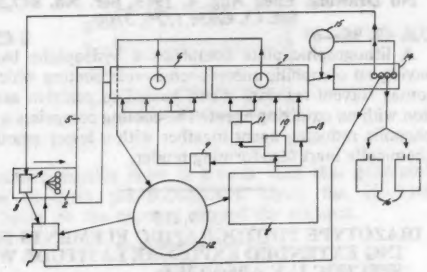


Diazotype photographic elements having stratified light-sensitive layers including a diazonium salt and a coupler compound which can react with the diazonium salt to produce an azo dye are able to reproduce highlight and shadow details of continuous tone images under widely varying exposure conditions and without background stain by the inclusion therein of an alkaline-bleachable ultraviolet absorber layer which is positioned such that it intercepts activating exposing radiation not later than its passage through the terminally irradiated light-sensitive layer. Advantageous ultraviolet absorber materials include substituted pyrylium salts and substituted thiapyrylium salts such as 2,4,6-triphenylthiapyrylium fluoroborate. Additionally, duplicating characteristics including the print speed and image quality of subsequent generation copies are improved.

3,679,416
AGGLOMERATION OF POWDERED COFFEE
Ismar M. Reich, Merrick, N.Y., assignor to Chock Full O'Nuts Corporation, New York, N.Y.
Filed Dec. 2, 1970, Ser. No. 94,462
Int. Cl. A23f *1/04*
U.S. Cl. 99—71 **6 Claims**

A means and method for modifying instant coffee by agglomeration to form particles of controlled increased size, darkened appearance, and controlled bulk density. A falling stream of instant coffee is sprayed with an aqueous fluid and is allowed to drop onto a moving layer

of dry instant coffee. The combined moistened and dry coffee is dried at low temperature. Agglomerated particles are removed by screening and the undersize par-



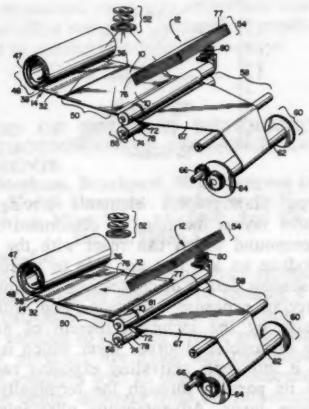
ticles are recycled. Regulation of the moving layer velocity controls agglomerate particle size. Adjustment of other parameters controls bulk density.

3,679,417

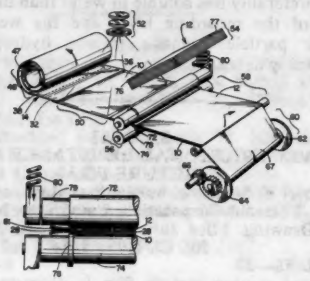
SIMPLIFIED DIFFUSION-TRANSFER FILM PRODUCTS

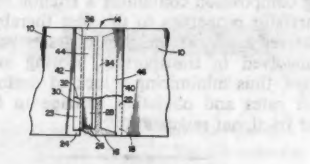
Frank W. Knight, Salem, N.H., and David Van Allen, Malden, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed June 30, 1970, Ser. No. 51,250
Int. Cl. G03c *1/48, 3/00*
U.S. Cl. 96—78 **19 Claims**



A plurality of sheets connected together by pod assemblies to form a flexible elongated strip of materials and a plurality of individual second sheets of photographic material each of which is adapted to overlie one of the aforementioned sheets to facilitate the production of a photographic print. Each pod assembly includes a carrier sheet connecting adjacent first mentioned sheets and which has a rupturable container of processing fluid extending thereacross in spaced apart relationship to each such adjacent first-mentioned sheet. Further, each such pod assembly includes a bib extending over the adjacent edge of one of the first-mentioned sheets connected thereto and a trapping sheet extending over the adjacent edge of the other first-mentioned sheet connected thereto. When positioned over a first-mentioned sheet each second photographic sheet has one of its edges disposed over the bib of one pod assembly while the opposite edge thereof is disposed under the trapping sheet of the next pod assembly. Typically, each first-mentioned sheet may in-





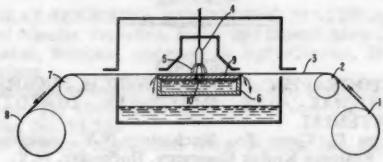
clude an image-recording component and each second sheet may comprise an image-receiving component.

3,679,418

PROCESS FOR TREATING A METAL SURFACE AND REPROGRAPHIC MATERIAL COMPRISING A SURFACE SO TREATED

Joachim Stroszynski, Wiesbaden, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Sept. 25, 1968, Ser. No. 762,558
Claims priority, application Germany, Sept. 28, 1967, P 16 71 508.5
Int. Cl. G03c *1/76, 1/94*
U.S. Cl. 96—86 **5 Claims**



This invention relates to a process for treating a metal surface, wherein a surface of a metal foil is subjected to a uniform treatment with a plasma arc jet, and also to a reprographic material which comprises a metal surface which has been treated according to the process.

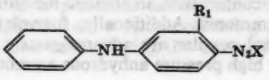
3,679,419

LIGHT-SENSITIVE DIAZO CONDENSATE CONTAINING REPRODUCTION MATERIAL

Thomas N. Gillich, Berkeley Heights, N.J., assignor to Azoplate Corporation, Murray Hill, N.J.

No Drawing. Filed May 20, 1969, Ser. No. 826,289
Int. Cl. G07c *113/04;* G03c *1/54;* G03f *7/08*
U.S. Cl. 96—91 R **4 Claims**

This invention relates to novel light-sensitive reproduction material, a process for the preparation of novel light-sensitive condensation products, and to said condensation products as compounds, the compounds being condensation products of at least one diazonium salt of the general formula



wherein

R_1 is selected from the group consisting of H, an alkoxy group having from 1 to 4 carbon atoms, and a 2-hydroxy-ethoxy group, and

X is the anion of the diazonium salt,

and at least one compound of the general formula

$$R(—CH_2—OR_2)_n$$

wherein

n is an integer from 1 to 4,

R is a residue produced by the splitting off of *n* hydrogen atoms from a diphenyl ether, and

R_2 is selected from the group consisting of H, an alkyl group with 1 to 4 carbon atoms, and an acyl group with 1 to 4 carbon atoms,

said condensation product containing, on the average, 0.25 to 0.75 unit derived from $R(—CH_2—OR_2)_n$ per diazo group.

3,679,420

TWO COMPONENT DIAZOTYPE WITH AZO COUPLER

Taizo Yokoyama, Asahi-ku, Osaka, Japan, assignor to Mita Industrial Company Limited, Osaka, Japan

No Drawing. Filed Aug. 5, 1969, Ser. No. 847,702
Claims priority, application Japan, Aug. 7, 1968, 43/55,677
Int. Cl. G03c *1/58*
U.S. Cl. 96—91 R **9 Claims**

A copying material comprising as an azo coupling component a compound of the general formula

$$Z_1—NH—\underset{\displaystyle X}{\overset{\displaystyle |}{C}}—NH—Z_3$$

wherein X is =O, =S, or =N—Z_3; Z_2 is an oxyaryl group or a group expressed by the formula

$$—Z_4—NH—\underset{\displaystyle X}{\overset{\displaystyle |}{C}}—NH—Z_5$$

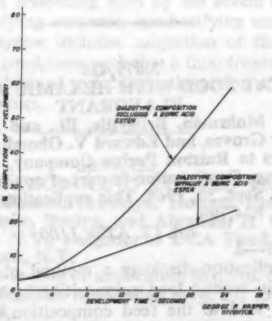
wherein Z_4 is an arylene group, each of Z_1 and Z_5 is an oxyaryl group; Z_3 is hydrogen, an alkyl group, an oxyalkyl group or an oxyaryl group; the oxyaryl or arylene groups optionally having a further substituent.

3,679,421

AZO DYE-FORMING SYSTEM INCLUDING A BORIC ACID ESTER

George P. Kasper, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 26, 1969, Ser. No. 853,028
Int. Cl. G03c *1/60, 1/52, 1/58*
U.S. Cl. 96—91 R **7 Claims**


DIAZOTYPE COMPOSITION EXCLUDING A BORIC ACID ESTER
DIAZOTYPE COMPOSITION WITHOUT A BORIC ACID ESTER
DEVELOPMENT TIME - SECONDS

The resistance to premature coupling and the development rate of two-component diazotype compositions (i.e., at least one diazonium salt and at least one coupler compound) are advantageously increased by the inclusion therein of a boric acid ester.

3,679,422

PHOTOTHERMIC COMPOSITION CONTAINING ONIUM HALIDE SENSITIZER AND THE USE THEREOF

Richard A. de Mauriac, Rochester, and Gary Lynn Hiller, Hilton, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 3, 1970, Ser. No. 43,172
Int. Cl. G03c *1/28, 1/72*
U.S. Cl. 96—107 **21 Claims**

An onium halide compound, such as 1-phenethyl-2-picolinium bromide or trimethylphenylammonium bromide, with an image-forming combination containing a heavy metal salt oxidizing agent, such as silver behenate, and a reducing agent, such as a bis-naphthol reducing agent, in a photosensitive and thermosensitive element suitable for dry processing with heat, provides increased photosensitivity and in some cases reduced background densities. A combination of a bis-β-naphthol reducing agent and a colorless, speed-increasing, onium halide compound in conjunction with a stable source of silver for physical development is useful in photosensitive elements for dry processing. The element can contain a sensitizing dye and an activator-toning agent. A stable, developed image can be provided by heating the element after exposure. The photosensitive component can be photographic silver halide or other suitable photosensitive metal salts.

3,679,423

SILVER HALIDE EMULSION CONTAINING ACETYLENE DICARBOXYLIC ACID ANIONS ANTIFOGGANT

Robert Joseph Pollet, Vremde, and Antoon Leon Vandenberghe, Hove, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed June 22, 1970, Ser. No. 48,541
Claims priority, application Great Britain, July 8, 1969, 34,432/69
Int. Cl. G03c *5/30*
U.S. Cl. 96—109 **8 Claims**

Photographic materials comprising a light-sensitive silver halide emulsion layer having in the emulsion layer or in an adjacent water-permeable layer a compound providing acetylene dicarboxylic acid anions are described. These photographic materials have decreased fogging tendency, even under conditions of high temperature and humidity, and their sensitivity is practically not lowered by the presence of this compound.

3,679,424

FOGGED, DIRECT-POSITIVE SILVER HALIDE EMULSION CONTAINING NITRON

Jean-France Leon Paul Barbier and Guy Renard, Vincennes, France, assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 5, 1969, Ser. No. 874,393
Int. Cl. G03c *1/34*
U.S. Cl. 96—109 **7 Claims**

This invention relates to direct-positive, silver halide, photographic elements. In one aspect, at least one layer of said element contains nitron. In another aspect, an over-layer containing light-insensitive silver chloride is used to provide more uniform photographic characteristics in used developers. In still another aspect, improved direct-positive silver halide grains are prepared by reducing a portion of the water-soluble silver salt before admixture with the water-soluble halide to precipitate the silver halide grains.

3,679,425

COAGULATION OF AQUEOUS POLYMERIC DISPERSIONS OF SILVER HALIDE

Kenneth Robert Hollister, Pittsford, and Ernest John Perry, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,701
Int. Cl. G03c *1/04*
U.S. Cl. 96—114 17 Claims

Processes are disclosed for coagulating and redispersing aqueous dispersions of polymeric compounds which contain anionic sulfoxy groups thereon. Generally, the polymeric dispersion is coagulated by adding a polymeric compound containing primary amine groups thereon and providing a dilution ratio of at least 100 grams of liquid per gram of polymer comprising anionic sulfoxy groups. The coagulated material can then be decanted and easily redispersed with low volumes of liquid.

3,679,426

PHOTOSENSITIVE AND THERMOSENSITIVE ELEMENTS, COMPOSITIONS AND PROCESSES

Mary J. Youngquist, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 9, 1970, Ser. No. 27,150
Int. Cl. G03c *1/02*
U.S. Cl. 96—114.1 17 Claims

A reductone reducing agent, such as an amino hexose reductone or an anhydro dihydro amino hexose reductone, and an activate toning agent in a photosensitive and thermosensitive element suitable for so-called dry processing with heat provide improved black tone, increased maximum density and reduced background print-out. Such an element which contains an oxidation-reduction image forming combination in which a reductone is employed as a reducing agent is especially suitable. This can be an image reproduction sheet in which a radiation sensitive heavy metal salt can be reduced to free metal and form the image components in an oxidation-reduction reaction combination by producing a visible color change with an organic silver salt.

3,679,427

RIGIDIZED CARBOCYANINE DYES AND PHOTOGRAPHIC EMULSIONS

Lewis L. Lincoln and Donald W. Heseltine, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,708
Int. Cl. G03c *1/08*
U.S. Cl. 96—120 15 Claims

Rigidized carbocyanine dyes including at least two nitrogen-containing heterocyclic nuclei with a nitrogen atom of each nucleus joined by a 5 carbon polyene chain, each heterocyclic nucleus also having the non-metallic atoms to complete, in combination with the two nitrogen atoms and the carbon atoms of the intervening polyene chain, a nucleus which is either 3,4,5a,6,7,8-hexahydro-4aH - pyrano[3,2-c; 5,6-c']dipyridine or an analog wherein the member in the 5-position is alternatively one such as a sulfur atom, a nitrogen atom, a selenium atom, etc., are useful as spectral sensitizing dyes for silver halide. Since they are structurally rigidized, their absorption envelope is more selective, and they exhibit high stability in solution and an increased fluorescence efficiency when compared to similar, but non-rigidized dyes. The high degree of fluorescence makes these compounds advantageous also as textile dyes, plastics dyes and colorant dyes for related situations including cosmetics, e.g., nail polish, facial coloring compositions, lipsticks or the like. Additionally, these rigidized carbocyanine dyes are desirable as colorants for coatings like paints, lacquers and the like when dispersed or dissolved therein.

3,679,428

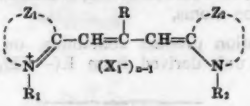
SPECTRALLY SENSITIZED PHOTOGRAPHIC EMULSIONS

Keisuke Shiba, Motohiko Tsubota, Akira Sato, Tadashi Ikeda, and Akira Ogawa, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 23, 1970, Ser. No. 57,607
Claims priority, application Japan, July 23, 1969, 44/58,180
Int. Cl. G03c *1/08*
U.S. Cl. 96—124 6 Claims

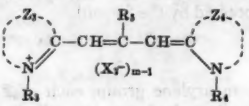
A silver halide light-sensitive photographic emulsion containing at least one sensitizing dye represented by the following Formula I:

(Formula I)



in which R is a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms; R_1 and R_2, which may be the same or different, each represents an alkyl group, an allyl group and an alkyl group substituted by hydroxy, carboxy, sulfo or mixtures thereof, at least one of R_1 and R_2 being a substituted alkyl group; Z_1 is a non-metallic atomic group necessary to complete a heterocyclic nucleus of the naphthothiazole, naphthoselenazole or naphthoxazole series; Z_2 is a non-metallic group necessary to complete a nucleus of the naphthoselenazole, naphthoxazole, naphthoimidazole or benzimidazole series; X_1^- is an acid anion and n is 1 or 2, and at least one sensitizing dye represented by the following Formula II:

(Formula II)



in which R_5 is an alkyl group having from 1 to 4 carbon atoms; R_3 and R_4, which may be the same or different, each represents an alkyl group, an allyl group and an alkyl group substituted by hydroxy, alkoxy, carboxy, sulfo or mixtures thereof; Z_3 and Z_4, which may be the same or different, each represents a non-metallic atomic group necessary to complete a benzothiazole or a benzoselenazole nucleus, which may be substituted by halogen, phenyl, alkoxyphenyl, hydroxyphenyl, carboxyphenyl, an alkyl having from 1 to 4 carbon atoms, hydroxyl, alkoxy, carboxyl, carboxylic acid ester, carbamoyl or alkyl carbamoyl groups; X_2 is an acid anion and m is 1 or 2.

3,679,429

CAT FOOD WITH HEXAMIC ACID FLAVORANT

Robert K. Mohrman, Belleville, Ill., and Paul E. Kifer, Webster Groves, and Edward V. Oborsh, Ballwin, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 763,924, Sept. 30, 1968. This application May 14, 1969, Ser. No. 824,708
Int. Cl. A23k *1/00*
U.S. Cl. 99—2 6 Claims

This application discloses a method of enhancing the flavor of an animal feed composition by adding a flavor improving acid to the feed composition. The acid may be applied directly to the food particle, applied over a fat coating, or incorporated in a fat coating. The flavoring acid may be added in the amount of 0.05 to 5% by weight of the feed.

3,679,430

CONDITIONER FOR BAKED GOODS

Hermann Birnbaum, Pittsburgh, Pa., assignor to Caravan Products Co., Inc., Totowa, N.J.

No Drawing. Filed Oct. 30, 1969, Ser. No. 872,756
Int. Cl. A21d 2/16
U.S. Cl. 99—90 CB 12 Claims

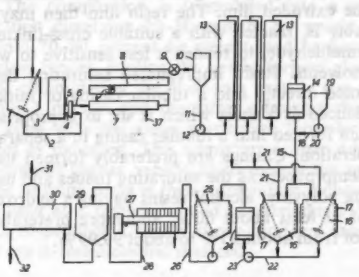
A conditioner that can be added to the fermentation broth in a continuous baking process without causing serious foaming, the conditioner comprising 50–80% of surface active agents selected from polyoxyethylene sorbitan esters of fatty acids having 16–18 carbon atoms or ethoxylated monoglycerides, and a hard monoglyceride, and 50–20% of fatty materials comprising a combination of a saturated fatty material such as hydrogenated lard and an unsaturated fatty material such as lard. The preferred form of the conditioner is that of a thick aqueous emulsion containing 40–50% water. While eliminating foaming in the fermentation broth, the conditioner also provides excellent properties in the baked goods such as anti-staling, increased loaf volume, and prolonged compressibility. Whereas foaming is no problem in the conventional batch process, be it the straight dough method or the sponge-dough method, the conditioner provides the same quality improvement in the baked goods produced by the conventional process such as reducing firming, increased specific volume and prolonged shelf life as observed in baked goods produced by the continuous process.

3,679,431

WORT PRODUCTION

David Henry Clayton, 161 Manthorpe Road, Grantham, England, and John Karkalas, Wilhelm Becksvej 93, 8000 Aarhus C, Denmark

Filed May 13, 1969, Ser. No. 824,048
Claims priority, application Great Britain, May 15, 1968, 23,028/68; Apr. 22, 1969, 20,409/69
Int. Cl. C12c 7/00
U.S. Cl. 99—52 14 Claims



A method of producing wort by the action on a mash of starch liquefying enzymes, saccharifying enzymes and proteolytic enzymes includes subjection of the mash to hydrodynamic conditions such that a thixotropic reduction of viscosity is obtained to facilitate the action of the starch liquefying enzymes.

3,679,432

METHOD OF PRODUCING COOKED PRODUCTS

Robert F. Schiffmann, Brooklyn, Howard Roth, Bronx, David H. Lipka, Roslyn, and Abraham H. Goodman, Great Neck, N.Y., assignors to DCA Food Industries Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 519,255, Jan. 7, 1966. This application Aug. 17, 1970, Ser. No. 64,218
Int. Cl. A21d 13/0, 13/08
U.S. Cl. 99—86 15 Claims

A fried bakery product, such as a chemically leavened and extruded doughnut, is produced by first totally immersing a piece of dough for the fried product in an edible frying medium at a frying temperature wherein the edible frying medium is liquid and for a time sufficient to assure proper shaping of the dough piece. Thereafter, the dough piece, while partially immersed in the frying medium, is subjected to microwave energy concurrent with frying of the underside thereof. The fried product is completed by inverting the same in the frying medium.

3,679,433

PROTEIN-ENRICHED BAKED PRODUCTS AND METHOD OF MAKING SAME

Yeshajahu Pomeranz, Madison, Wis., and Karl F. Finney, Manhattan, Kans., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Sept. 8, 1970, Ser. No. 70,490
Int. Cl. A21d 13/06, 2/26, 2/16
U.S. Cl. 99—90 HP 5 Claims

Nutritionally improved baked products of consumer acceptance quality are produced by adding small amounts of naturally occurring or synthetic glycolipids to dough formulations containing added protein concentrates from plant or animal sources.

3,679,434

METHOD OF PREPARING FRESH UNCURED MEAT PRODUCTS

John C. Bard, Monona, and Floyd C. Olson, Madison, Wis., assignors to Oscar Mayer & Co., Inc., Madison, Wis.

No Drawing. Filed July 13, 1970, Ser. No. 54,566
Int. Cl. A22c 18/00
U.S. Cl. 99—107 6 Claims

Bodies of cooked fresh meat of predetermined uniform size, shape and weight suitable for slicing are made from lean primal cuts or lean chunks of whole (unground) uncooked, fresh (uncured) meat with at least a substanial portion of the chunks weighing at least about one-half pound a piece and at least in places having a minimum thickness of about one inch. Such primal cuts or chunks are injected with a solution of edible polyphosphate salt prior to being mechanically worked until a tacky exudate develops on the meat surfaces. The mechanically worked primal cuts or chunks are pressed together to form consolidated meat bodies of predetermined uniform size, shape and weight suitable for cooking. Injection of the salt furnishing the polyphosphate ions, as distinguished from surface treatment therewith, prevents, or at least substantially reduces and retards, the rancidity which otherwise would quickly develop in the cooked fresh meat bodies on cooling.

3,679,435

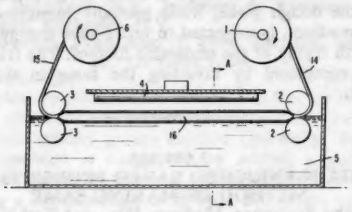
SAUSAGE CASINGS OF SYNTHETIC HIGH-POLYMER THERMOPLASTIC MATERIAL

Ludwig Klenk, Hallgarten, Rheingau, Hans Strutzel, Wiesbaden-Dotzheim, and Richard Sobottka, Wiesbaden-Biebrich, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Sept. 25, 1968, Ser. No. 762,597
Claims priority, application Germany, Sept. 27, 1967, K 63,470
Int. Cl. A22c 13/00; B29c 13/00
U.S. Cl. 99—176 1 Claim

A plastic sausage casing material which is convertible into an annular casing and to a process for the manufacture of such a casing in which process a tube of synthetic high-polymer thermoplastic material, which has been longitudinally stretched and thus is shrinkable in its longitudinal direction by heating, is filled with a gas and

the gas-filled tube is heated on one longitudinal side only, while preventing longitudinal shrinkage, to a temperature



at which the tube loses its shrinkability while maintaining conditions preventing shrinkage.

3,679,436

PREPARATION OF FIBROUS REINFORCED SAUSAGE-TYPE CASINGS FROM ORGANIC SOLVENT SOLUBLE POLYVINYL ALCOHOL RESINS

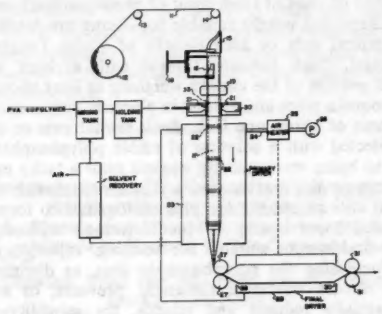
Seymour Oppenheimer, Chicago, and Albin F. Turbak, Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed May 26, 1969, Ser. No. 827,594

The portion of the term of the patent subsequent to Feb. 8, 1989, has been disclaimed

Int. Cl. A22c *13/00*

U.S. Cl. 99—176 12 Claims



A novel fibrous casing for packaging sausages and similar products comprises a saturating tissue impregnated with a continuous film of an insolubilized, film-forming polyvinyl alcohol resin. The casing is preferably prepared by impregnating a suitable saturating tissue with an organic solvent solution of a polyvinyl alcohol resin and then insolubilizing the resin as a film on the tissue, e.g., by contact with a coagulation (acid, salt, or non-solvent liquid) bath, by evaporation of the solvent, etc. Further insolubilization of the resin film may be effected by reacting the resin with a suitable cross-linking agent, viz formaldehyde. Resin impregnated-saturating tissue may be formed directly into a tubular casing or initially may be produced as a sheet which is slit to appropriate width and then formed into a tubular casing in a separate seaming operation. Casings are preferably formed using long fiber hemp papers as the saturating tissues and using organic solvent soluble, film-forming polyvinyl alcohol resins having a hydroxyl group D.S. of at least 20%, e.g., in the range of from about 25% to about 99.99%.

3,679,437

PREPARATION OF FIBROUS REINFORCED SAUSAGE-TYPE CASINGS FROM MELT-EXTRUDED POLYVINYL ALCOHOL RESINS

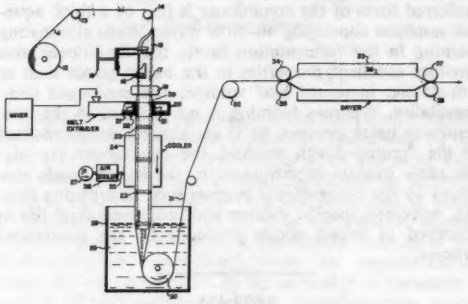
Seymour Oppenheimer, Chicago, and Albin F. Turbak, Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed May 26, 1969, Ser. No. 827,643

The portion of the term of the patent subsequent to Feb. 8, 1989, has been disclaimed

Int. Cl. A22c *13/00*; C08f *3/34*

U.S. Cl. 99—176 10 Claims



A novel fibrous casing for packaging sausages and similar products comprises a saturating tissue impregnated with a melt-extruded film of a polyvinyl alcohol resin. The casing is preferably prepared by melt extruding a plasticized, film-forming polyvinyl alcohol resin to form a film and, simultaneous with or subsequent to the extrusion step, impregnating and coating a saturating tissue with the extruded film. The resin film then may be, and preferably is, reacted with a suitable cross-linking agent, viz formaldehyde, to render it less sensitive to water and other solvents. Resin impregnated saturating tissue may be formed directly into a tubular casing or initially may be produced as a sheet which is slit to appropriate width and then formed into a tubular casing in a separate seaming operation. Casings are preferably formed using long fiber hemp papers as the saturating tissues and using film-forming polyvinyl alcohol resins having a hydroxyl group D.S. of at least about 60%, and more preferably in the range of from about 95% to about 99.99%.

3,679,438

METHOD FOR MATURING WHEAT FLOUR

Fujihiko Yokoyama, Tokyo, Tohru Yoneyama, Saitama-ken, and Shigehiko Sato, Higashivodogawa-ku, Osaka, Japan; said Yokoyama and said Yoneyama assignors to Nisshin Flour Milling, Ltd., Tokyo, and said Sato assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed May 14, 1969, Ser. No. 824,663

Int. Cl. A21d *2/04, 2/20*

U.S. Cl. 99—232 10 Claims

Freshly milled wheat flour can be matured in a remarkably shortened period of time without fear of overmaturing by incorporating thereinto at least one of hydrogen peroxide adducts of alkali metal phosphates and alkali metal carbonates in a concentration of from about 10 to about 500 parts per million parts by weight of the flour, the alkali metal being sodium or potassium.

3,679,439

LEAD-CONTAINING METALLIZATIONS

Alvin A. Milgram, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 829,141, May 29, 1969. This application Mar. 23, 1971, Ser. No. 127,342

Int. Cl. C09d *5/24*

U.S. Cl. 106—1 11 Claims

Metallizing compositions, for producing fired-on coatings which have good electrical properties, comprising noble metals, an inorganic binder and 1–25% by weight of lead. The metallic lead is added to the metallizing composition to provide a fired metallization that has solder wetability and increased solder leach resistance. The metallizing composition are used to form electrodes, microcircuitry and other related articles in the electronic industry.

3,679,440

HIGH K DIELECTRIC MATERIALS

Daniel W. Mason, West Peabody, Mass., assignor to Owens-Illinois, Inc.

No Drawing. Continuation-in-part of application Ser. No. 54,591, July 13, 1970. This application Jan. 18, 1971, Ser. No. 107,566

Int. Cl. C04b *35/00;* C03c *3/10;* H01b *3/02*

U.S. Cl. 106—39 R 5 Claims

Unique dielectric compositions may be used to formulate thick film pastes for printing microelectronic capacitors. The resulting dielectrics exhibit dielectric constants greater than about 500 and capacitances greater than about 80,000 picofarads per square inch at a thickness of at least about 1.0 mil. The unique dielectric compositions comprise about 55–76 percent by weight of a ferroelectric material and 45–24 percent of a glass binder. The glass binder employed comprises a lead barium borosilicate glass and a ferroelectric material previously dissolved therein. The composition is formulated into a printing paste by first dissolving 20–30 percent by weight ferroelectric into 70–80 percent by weight lead barium borosilicate glass binder, cooling the newly formed glass to a solid state comminuting the glass to a particle size of less than about 1 micron and thereafter admixing the comminuted glass with the same particulate ferroelectric in an amount as indicated. This admixture is then added to a liquid organic carrier vehicle to formulate the printing paste. The printing paste is then printed into a chosen design and fired at a temperature of approximately 1,000–1,050° C. to produce a highly dense, uniform, and substantially crack-free dielectric material.

3,679,441

CERAMIC PRODUCT FROM FLY ASH AND METHOD OF MAKING SAME

Kelsey I. Harvey, 1098 5th St., Beaver, Pa. 15009

No Drawing. Continuation-in-part of application Ser. No. 640,519, May 23, 1967. This application Oct. 1, 1970, Ser. No. 77,322

Int. Cl. C04b *33/00*

U.S. Cl. 106—41 3 Claims

The invention relates to a ceramic product comprising the waste ash material obtained from coal-burning industrial power and other plants, and to the method of producing the same. Essentially, the invention is a process for producing a substitute for conventional clay or shale ceramic products with properties at least equivalent to those products by the use of very near to 100% of the waste ash material normally called fly ash, bottom ash, clinker, etc.

3,679,442

HOT-PRESSED TITANIUM NITRIDE-TITANIUM CARBIDE COMPOSITIONS

Horacio E. Bergna, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,891

Int. Cl. C04b *35/52*

U.S. Cl. 106—43 4 Claims

Solid solutions of from 10 to 90 volume percent titanium nitride and 90 to 10 volume percent titanium carbide having an average grain size of less than 2 microns and a density of at least 99 percent of theoretical are prepared by hot-pressing an intimate mixture of fine powdered titanium nitride and titanium carbide at a temperature between 1750° and 1900° C. and a pressure between 3000 and 6000 pounds per square inch. The dense compositions are very strong and hard and possess a very desirable combination of oxidation resistance, wear-resistance, scratch-resistance and corrosion resistance.

3,679,443

MINERAL WOOL MADE FROM SILICATE GLASS COMPRISING IRON OXIDES

Fridolin Mechel, Ludwigshafen-Edigheim, and Hans Kummermehr, Ludwigshafen (Rhine), Germany, assignors to Grunzweig & Hartmann Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Dec. 17, 1969, Ser. No. 885,983

Claims priority, application Germany, Dec. 18, 1968, P 18 15 244.8

Int. Cl. C03c *13/00*

U.S. Cl. 106—50 4 Claims

Temperature and acid resistant mineral wool, fibers, filaments and the like comprising the glass forming oxides SiO_2 and Al_2O_3, meltable iron oxides in an amount of at least 18 wt. percent and from 0 to 5 wt. percent of alkali metal and/or alkaline earth metal oxides.

3,679,444

CONTROL OF SHRINKAGE AND GROWTH OF SILICON OXYNITRIDE BODIES

Malcolm E. Washburn, Princeton, Mass., assignor to Norton Company, Worcester, Mass.

No Drawing. Filed June 29, 1970, Ser. No. 50,940

Int. Cl. C04b *35/58*

U.S. Cl. 106—55 3 Claims

Control of the physical dimensions of silicon oxynitride articles, during firing of the shaped reaction mix, is achieved by inclusion of colloidal silica, such as fume silica, in the reaction mix, preferably in the amount of 5% by weight of the mix, exclusive of temporary binders. Use of fused silica, instead of flint, also helps control dimensional changes. Amounts of from 2% to 40% of colloidal silica are useful in control of shape or properties of fired product.

3,679,445

LOW DENSITY CONCRETES AND THEIR MANUFACTURE

Alan Colin Scott Howe, Hemel Hempstead, England, assignor to John Laing and Son Limited, London, England

No Drawing. Filed Aug. 25, 1969, Ser. No. 852,920

Claims priority, application Great Britain, Aug. 23, 1969, 40,418/68

Int. Cl. C04b *31/02*

U.S. Cl. 106—88 26 Claims

A plastic concrete or mortar mix including an incorporated gas such as entrained air, and from one to ten

grams of short fibres per pound of cement uniformly distributed throughout the mix.

3,679,446

MOLDING MATERIALS OF CALCIUM SILICATE HYDRATE AND SHAPED PRODUCTS THEREOF

Kazuhiko Kubo, Motosu-gun, Gifu-ken, Japan, assignor to Kabushiki Kaisha Osaka Packing Seizosho, Osaka-shi, Japan

Filed June 2, 1969, Ser. No. 829,181
Claims priority, application Japan, June 4, 1968, 43/38,421; June 8, 1968, 43/39,531; Nov. 1, 1968, 43/80,135; Nov. 4, 1968, 43/80,820
Int. Cl. C04b *15/06*
U.S. Cl. 106—120 10 Claims

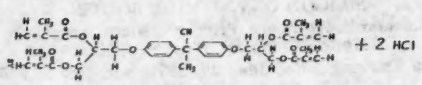
A molding material of crystallized calcium silicate hydrate which comprises water and calcium silicate crystals dispersed in the water in the weight ratio of solid to water of between 1:10 and 1:25; at least 40 weight percent of said calcium silicate crystals having formed numerous small agglomerates of a diameter of 10 to 150 microns by being three-dimensionally interlocked with one another; and agglomerates being dispersed in the water in substantially globular form; a shaped product of crystallized calcium silicate hydrate which comprises agglomerates of calcium silicate crystals being compressed to at least one direction and interlocked with one another and voids interspersed therebetween, said agglomerates having had a diameter of 10 to 150μ.

3,679,447

TETRAVINYL-VINYL MONOMER PAINT COMPOSITION AND PAINTING PROCESS

Elihu Aronoff, Framingham, Mass., and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 4, 1969, Ser. No. 847,046
Int. Cl. C09k *1/02*
U.S. Cl. 106—287 16 Claims



A substrate is coated with a film-forming composition consisting essentially of vinyl monomers and a unique tetravinyl compound and the coating is converted to a tenaciously adhering, solvent-resistant, wear and weather-resistant coating by exposing the coated substrate to ionizing radiation, preferably in the form of an electron beam. This tetravinyl compound is formed by first reacting a diepoxide with acrylic acid and/or methacrylic acid and subsequently reacting the resultant ester condensation product with a vinyl unsaturated acyl halide.

3,679,448

CREDIT CARD AND METHOD OF LUMINESCENT PRINTING

Herbert Tramposch, Riverside, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed July 27, 1970, Ser. No. 58,486
Int. Cl. B41m *3/14;* B44d *1/44*
U.S. Cl. 117—1 1 Claim

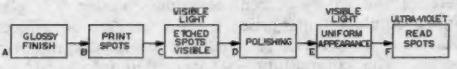
A plastic credit card is to be imprinted with a luminescent spot code readable under ultra-violet radiation for use in verification of the subscriber's account. The luminescent marker material employed for this purpose is borne in a solvent which attacks the material of the credit card, producing a surface etching effect which is visible under ordinary light. To avoid betraying the existence and locations of the luminescent spots in this manner, the card is treated, prior to luminescent printing, with a solvent material to produce a similar etching effect over an entire background area. The locations where printing subsequently takes place are then indistinguishable from the background under visible light.

3,679,449

CREDIT CARD AND METHOD OF POLISHING

Marc N. Nagot, Springdale, and Frederic E. Zucker, Stamford, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed July 27, 1970, Ser. No. 58,493
Int. Cl. B41m *3/14;* B44d *1/44*
U.S. Cl. 117—1 1 Claim



A glossy plastic credit card is to be imprinted with a luminescent spot code readable under ultra-violet radiation for use in verification of the subscriber's account. The luminescent market material employed for this purpose is borne in a solvent which attacks the material of the credit card, producing a surface etching effect which is visible under ordinary light. To avoid betraying the existence and location of the luminescent spots in this manner, the card is treated, after luminescent printing, by a heat process to repolish the locations where printing took place, making them indistinguishable from the background under visible light.

3,679,450

BIOPSY METHOD

Leroy Earl Beightol, Los Angeles, Calif., assignor to Roy Nutt

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,114
Int. Cl. A01n *1/00*
U.S. Cl. 117—3 13 Claims

This patent describes a novel method of rapidly preparing tissue for biopsic examinations which provides for the rapid preparation of thinner tissue sections, said method comprising infiltrating a fixed and dehydrated tissue sample with a liquid ultraviolet light-curable thermosetting resin system having a curing threshold in the presence of ultraviolet light on the order of one minute or less, preferably comprising a polyester containing carbon-to-carbon unsaturation, an ethylenically unsaturated monomer polymerizable therewith, and an activator, and curing

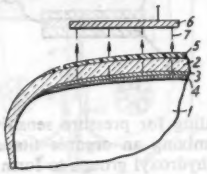
said sample in the presence of ultraviolet light for several minutes to form a rigid block adapted to yield ultrathin sections. The method of this invention is preferably concerned with the use of a thermosetting resin system which gives a clear or optically transparent polymer within the rigid block, can be sliced into sections having a thickness of as little as 0.2 micron in small sections and a corresponding improvement in larger sections.

3,679,451

NONGLARE COATING FOR SURFACES OF TV TUBES AND THE LIKE AND SUCH COATED SURFACES

Alvin M. Marks, Whitestone, Mortimer M. Marks, Beechhurst, and Arthur P. Kent, Kew Gardens, N.Y., assignors to Marks Polarized Corporation, Whitestone, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,261
Int. Cl. B44d *5/06*
U.S. Cl. 117—33.3 **72 Claims**



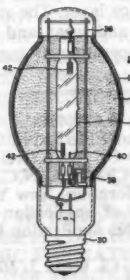
Coatings for decreasing reflected images from the surface of a transparent sheet used for displays of television, radar scopes, rear projection screens, picture glass and the like are disclosed. These coatings, which are comprised of at least two intermixed incompatible discrete polymeric bodies, enhance image contrast by decreasing the reflections of external objects and ambient light from the face of the display by absorption and scattering while transmitting light images with good resolution.

3,679,452

PROCESS FOR COATING LEHRING-SENSITIVE PHOSPHOR ONTO LAMP ENVELOPE

Richard C. Ropp, North Caldwell, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of abandoned application Ser. No. 620,074, Apr. 2, 1967. This application Jan. 28, 1971, Ser. No. 110,744
Int. Cl. B44d *1/02*; H01j *61/35*
U.S. Cl. 117—33.5 **3 Claims**



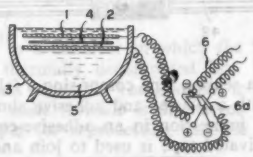
For coating lamp envelopes with phosphor which normally is sensitive to lehring, a small amount of room-temperature-stable, metal-free, ammonia-radical-containing compound which will decompose on heating to release ammonia gas is included in the phosphor paint. The paint also includes a small amount of organic binder material. When the coating paint is lehred after application to decompose the organic binder, the ammonia compound also decomposes to release ammonia gas which preserves the desired valence state of the activator in the phosphor. The finished discharge lamp has improved performance.

3,679,453

DEVELOPING METHOD AND DEVICE THEREFOR FOR USE IN WET TYPE ELECTRONIC OR ELECTROSTATIC PHOTOGRAPHY

Nobuyuki Katagiri and Hideaki Akiyama, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Mar. 21, 1969, Ser. No. 809,243
Claims priority, application Japan, Mar. 25, 1968, 43/19,335
Int. Cl. G03g *13/10, 15/10*
U.S. Cl. 117—37 LE **8 Claims**



A developing method and device therefor for use in wet type electrostatic photography wherein the polarities of DC voltage applied to a pair of bias electrodes are reversed. Accumulation of developing toner to the electrodes can be prevented.

3,679,454

EDGE-INKING OF SHOE SOLES AND COLORING OF UPPERS

John G. Penniman, Jr., 200 Tompkins Ave., Pleasantville, N.Y. 10570

No Drawing. Filed Nov. 25, 1969, Ser. No. 879,946
Int. Cl. B44d *1/16, 1/10*
U.S. Cl. 117—44 **8 Claims**

Black edge ink dye or other high strength or jetness dye is applied to the edge of shoe soles and top-lift of heels in such a manner that the edge-sole and top-lift do not have to be masked when the shoe upper attached thereto is colored by brushing or spraying, by the use of a water-insoluble black dye in the edge ink which is soluble in the resin used in the color coat and/or in a lacquer solvent used as a topcoat over the previously colored shoe upper. When a lacquer is applied to the upper portion of the shoe, it is also applied to the edge-sole and top-lift portions of the shoe, the resin in the color coat and/or the solvent in the lacquer topcoat, causing the dye coated thereon or impregnated therein to bleed or leach through the color applied to the upper, which incidentally also colored the edge-sole and top-lift to its original color, advantageously black.

3,679,455

PROCESS FOR THE PRODUCTION OF A SUPPORT FOR A PHOTOGRAPHIC SENSITIVE MATERIAL

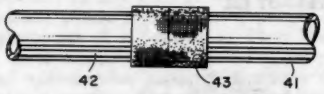
Tsuneo Kasugai and Nobuhiko Minagawa, Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Nov. 24, 1970, Ser. No. 92,529
Claims priority, application Japan, Nov. 27, 1969, 44/95,224
Int. Cl. G03c *1/78*
U.S. Cl. 117—47 **6 Claims**

A process for the production of a support for a photographic sensitive material comprising applying a subcoat

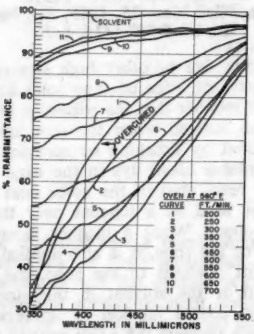
comprising a hydrophilic resin to the surface of a polyolefin coated paper, said resin having a higher relative dielectric constant and a dielectric power factor than those of the polyelefin and good adhesion with a photographic emulsion, and treating the support with microwaves under the conditions that discharging does not occur to adhere the subcoat firmly to the polyolefin support is disclosed.

3,679,456
METHOD OF MAKING SEALING TAPES
Chester C. Young, Dallas, Tex., assignor to Hardcast, Inc., Louisville, Ky.
Filed Apr. 1, 1970, Ser. No. 24,569
Int. Cl. B44d *1/44*
U.S. Cl. 117—63 7 Claims



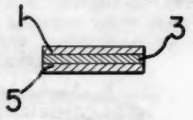
Disclosed is a sealing tape comprising a fabric medium impregnated with a plaster and adhesive slurry which is activated upon immersion in an adhesive-containing solution. The activated tape is used to join and seal joints of conduit and to encase insulated conduit. Methods and apparatus for making the tape are also disclosed.

3,679,457
METHOD FOR DETERMINING RELATIVE DEGREE OF CURE OF IMPREGNATED TIRE CORD
Jeanne E. Gordon, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed July 30, 1970, Ser. No. 59,502
Int. Cl. C03c *25/02*; G01n *21/24*
U.S. Cl. 117—66 2 Claims



A method for determining and controlling the degree of cure of a heat-curable composition. A heat-curable synthetic resinous composition comprising a vinyl chloride or a vinylidene chloride polymer is cured under a plurality of conditions differing in severity and the physical properties of each cured sample are determined. Each cured sample is extracted with an organic solvent, and the percent transmittance of the extract is spectrophotometrically determined in the visible region between 340–550 millimicrons. Cure of the same heat-curable composition is then controlled by monitoring the percent transmittance of extracts in the same solvent, measured by the same procedure, and increasing or decreasing the severity of the curing conditions as required to maintain the monitored transmittance at a desired level corresponding with desired physical properties. The present transmittance of the extract varies inversely as the degree of cure of the polymeric component. The method of this invention is particularly useful for controlling the cure of a resinous composition comprising a vinyl chloride or a vinylidene chloride polymer applied as a coating on glass filaments.

3,679,458
PRESSURE SENSITIVE ADHESIVE TAPE
Henry P. Sorell, Arlington Heights, Eugene Pomazak, Lindenhurst, and Sven Rygg, Glenview, Ill., assignors to Borden Inc., New York, N.Y.
Filed June 23, 1970, Ser. No. 49,046
Int. Cl. C09j *7/04*
U.S. Cl. 117—68.5 2 Claims



A release coating for pressure sensitive adhesive tape prepared by admixing an organic titanate with a polysiloxane having hydroxyl groups to form a reaction product of said siloxane and titanate in an aromatic solvent and further admixing with said reaction product in aromatic organic solvent solution a (higher) alkyl compound having an active hydrogen atom or a polymer having active hydrogen atoms containing a major proportion of such alkyl compound polymerized therein. The solvent is evaporated to leave the release coat of this invention which is used on pressure sensitive tapes.

3,679,459
BEARING MEMBER FOR HIGH TEMPERATURE APPLICATIONS
Vemulapalli D. Rao, Woodhaven, Yeshwant P. Telang, Grosse Ile, and Jerry E. White, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.
No Drawing. Filed Apr. 7, 1971, Ser. No. 132,231
Int. Cl. B44d *1/16*
U.S. Cl. 117—69 7 Claims

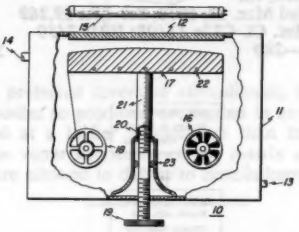
A seal member for rubbing against a rotating ceramic regenerator has a surface layer consisting essentially of calcium fluoride, zinc oxide and stannic oxide. The surface layer is supported on a metal substrate and a bonding layer of nickel aluminide can be applied between the substrate and the surface layer. The surface layer has surprisingly low friction and wear and excellent resistance to salt attack when operating at temperatures of about 900–1600° F.

3,679,460
COMPOSITE WEAR RESISTANT MATERIAL AND METHOD OF MAKING SAME
Edwin Durham Reid, Charlotte, N.C., assignor to Union Carbide Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 20,582, Mar. 18, 1970. This application Oct. 8, 1970, Ser. No. 79,090
Int. Cl. C23d *5/10*
U.S. Cl. 117—93.1 PF 7 Claims

A method of forming a metal oxide coating upon a workpiece, which coating may have a closely controlled surface roughness over a wide range of coating thicknesses. The method consists of applying a metal oxide base coating by an arc torch deposition process and thereafter applying a top surface coating of metal oxide with

a detonation gun deposition process. A wear-resistant composite coating having an arc torch-applied base portion with a roughness of 100 A.A. to 150 A.A. combined with a detonation gun-applied top surface coating having surface roughness of 150 A.A. to 450 A.A. is also disclosed as a preferred textile surface.

3,679,461
METHOD FOR MAKING PHOTOPOLYMERIZED TETRAFLUOROETHYLENE FILMS
Donald H. Maylotte, Schenectady, N.Y., assignor to General Electric Company
Filed June 30, 1970, Ser. No. 51,277
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 **6 Claims**



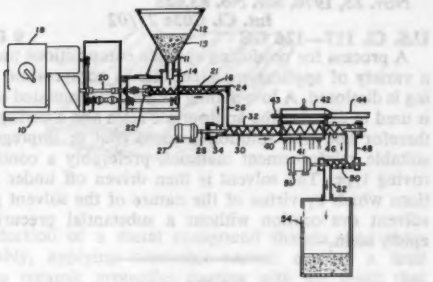
A method is provided for improving the rate of surface photopolymerization of tetrafluoroethylene to make continuous imperforate films and substrate-film composites. Surface photopolymerization of tetrafluoroethylene is achieved at pressures above 25 torr by positioning the substrate at a distance from the ultraviolet light source within the tetrafluoroethylene photopolymerization zone sufficient to provide for the production of continuous film. Composites made by the subject method can be utilized to make capacitors, cryogenic devices, etc.

3,679,462
METHOD FOR PERFECTING AIRCRAFT EMERGENCY LANDING
Donald J. Pistilli, Morristown, and Edward R. Degginger, Convent Station, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Oct. 16, 1970, Ser. No. 81,621
Int. Cl. B44d *1/08, 1/12*
U.S. Cl. 117—105.5 **6 Claims**

Aqueous dilatant solutions containing 0.5 to 6.0 weight percent alkali metal borate and 0.5 to 6.0 weight percent water-soluble polyvinyl alcohol can be rapidly applied to the surface of aircraft runways to provide a spark and fire-retardant cushion for emergency aircraft landings. This dilatant solution is preferably formed by mixing two aqueous systems, one containing borate and the other PVA. The mixing is preferably effected by spraying converging streams of the two solutions.

3,679,463
APPARATUS AND METHOD FOR CONTINUOUSLY DEPOSITING BERYLLIA THROUGH VAPORIZATION OF A BASIC FORMATE
Peter L. Fleischner, New York, N.Y., assignor to National Beryllia Corporation, Haskell, N.J.
Filed June 8, 1970, Ser. No. 44,344
Int. Cl. C23c *11/00*
U.S. Cl. 117—107.2 R **7 Claims**

An apparatus and method for vaporizing a basic formate of beryllium by continuous means in which the beryllium basic formate is mixed with a granular inert carrier material such as sand and as an aggregate is fed from a storage hopper through a closed screw conveyor system through a heating zone whereat the basic formate of beryllium is vaporized and in a vaporized condition



is delivered to a chamber in which the beryllium basic formate is thermally decomposed into beryllia and is deposited on a substrate. The granular inert material and unvaporized basic formate is discharged to a closed receiving hopper for reprocessing and the like.

3,679,464
COMPOSITION AND PROCESS FOR GLAZING CERAMIC WARE
Richard Andrew Eppler, Timonium, Md., assignor to SCM Corporation, Cleveland, Ohio
No Drawing. Application May 27, 1969, Ser. No. 828,345, now Patent No. 3,561,984, dated Feb. 9, 1971, which is a continuation-in-part of application Ser. No. 625,000, Mar. 22, 1967. Divided and this application Oct. 21, 1970, Ser. No. 82,803
Int. Cl. C03c *25/00*
U.S. Cl. 117—175 **6 Claims**

This patent application describes a composition for glazing ceramic ware, preparations useful for making same, process for glazing bodies and substrates with same, and resulting coated ceramic bodies. The composition for glazing is characterized by containing a particulate vitrifiable material, at least a substantial fraction of which is in the particulate vitreous state, said vitrifiable material, after melting into a fluent vitreous state, being self-nucleating or autocrystallizable or crystallizable into a substantially dimensionally stable continuous vitreous film in which are dispersed crystals of low thermal expansion. The glazing composition is particularly suited for glazing low expansion ceramic whiteware. Set forth as useful preparations are special particulate lithia-alumina-silica and alkaline earth-alumina-silica systems modified with flux in proportion controlled to restrict the development of a primary low thermal expansion crystalline phase, some of said preparations being modified with zirconia. The glazing process comprises partially coating a ceramic body with the composition for glazing, firing the coated body at a temperature sufficiently high and for a time sufficiently long for converting the composition into a fluent continuous vitreous surface coating, then adjusting the temperature to a value at which crystal growth in the surface coating occurs at a measurable rate, and finally cooling the resultant glazed ware at a rate consistent with keeping the ware integral. The invention shows particular advantage for making glazes of adjustable and low thermal expansion for thermal shock and mechanical shock resistant ceramic whiteware, for example, dinnerware, cookware, ceramic tile, acoustical tiles of the mineral type, sanitary ware, artware and electrical and technical porcelain. The invention is specially adaptable to conventional "two fire" glazing practice.

3,679,465
PROCESS FOR PRODUCING HARDENABLE EPOXY RESIN COMPOSITIONS
Robert Flynn, Toms River, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 877,477, Nov. 17, 1969. This application Nov. 23, 1970, Ser. No. 83,626
Int. Cl. C03c *25/02*
U.S. Cl. 117—126 GE 9 Claims

A process for producing epoxide compositions useful in a variety of applications especially in compression molding is disclosed. A low-boiling single or formulated solvent is used to dissolve the appropriate resin and a curing agent therefor and said solution used to coat or impregnate a suitable reinforcement material, preferably a continuous roving type The solvent is then driven off under conditions which by virtue of the nature of the solvent permit solvent evaporation without a substantial precuring of epoxy resin.

3,679,466
REPELLING OF MARINE ANIMAL PESTS
Mark M. Bowman, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Mar. 6, 1970, Ser. No. 17,305
Int. Cl. A01n *9/12*; B44d *1/26, 1/34*
U.S. Cl. 117—127 10 Claims

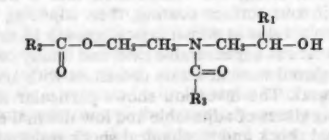
Methods of repelling marine animal pests from structures comprising wood and/or metal using an N,N-dimethylsulfenyl dithiocarbamate.

3,679,467
BURNER GRATE
Cloyd L. Betzer, Kankakee, Ill., assignor to Roper Corporation, Kankakee, Ill.
Filed Sept. 4, 1970, Ser. No. 69,673
Int. Cl. B32b *15/04*; F24c *15/10*
U.S. Cl. 117—129 3 Claims

A burner grate for gas burning ranges is disclosed. The intense heat areas of the grate comprise a steel substrate inhibited with respect to carbon migration coated with a semi-crystallized ceramic. Useful ceramic coatings have a remelt temperature in excess of about 1600° F. and include, in addition to SiO_2, oxides which function to promote crystallization, dissolve metal scale, control thermal expansion, and increase coating adhesion.

3,679,468
PROCESS FOR THE ANTISTATIC TREATMENT OF LINEAR CRYSTALLIZABLE POLYESTERS AND PRODUCTS THUS TREATED
Roland Feinauer, Werner Thier, and Wolfgang Schneider, Marl, Germany, assignors to Chemische Werke Huls, A.G., Marl, Germany
No Drawing. Filed Apr. 21, 1970, Ser. No. 30,606
Claims priority, application Germany, Apr. 26, 1969, P 19 21 527.1
Int. Cl. D06m *15/00*; B44d *1/22*
U.S. Cl. 117—138.8 F 15 Claims

Shaped antistatic polyester articles of manufacture are produced by applying to the surface thereof a compound having the formula:

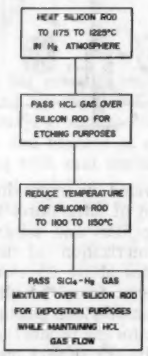


wherein R_1 is hydrogen or methyl and R_2 and R_3 each is an aliphatic group containing 1 to 17 carbon atoms, inclusive, at least one of which contains 11 to 17 carbon atoms, inclusive, and thereafter, to render the antistatic treatment permanent, heat setting at, e.g., 120–140° C.

3,679,469
CARPET BACKSIZING WITH LATEXES OF ACIDIC OLEFIN COPOLYMERS
Carl Moore, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Feb. 24, 1970, Ser. No. 13,833
Int. Cl. B32b *27/06*
U.S. Cl. 117—161 UZ 10 Claims

Carpets and other fibrous textile products are backsized with latexes of acidic copolymers of olefins such as ethylene and acidic comonomers such as acrylic acid by applying the latex, drying and fusing the copolymer in place.

3,679,470
METHOD FOR PRODUCING HIGH PURITY MONOCRYSTALLINE SILICON
Leo C. Rogers and Roger G. Nikirk, Phoenix, and Alfred J. Heitz, Mesa, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Mar. 13, 1970, Ser. No. 19,269
Int. Cl. C23c *11/08*; H01l *7/50*
U.S. Cl. 117—200 3 Claims

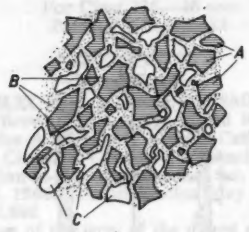

HEAT SILICON ROD TO 1175 TO 1225°C IN H_2 ATMOSPHERE
PASS HCL GAS OVER SILICON ROD FOR ETCHING PURPOSES
REDUCE TEMPERATURE OF SILICON ROD TO 1100 TO 1150°C
PASS $SiCl_4$-H_2 GAS MIXTURE OVER SILICON ROD FOR DEPOSITION PURPOSES WHILE MAINTAINING HCL GAS FLOW

A method of producing high purity monocrystalline silicon. A silicon rod is heated in a reducing atmosphere and an etchant passed thereover. After the etchant has etched the surface of the silicon rod, a gaseous mixture of a silicon halogenide and a reducing agent is passed over the silicon rod while the flow of the etchant is continued. The flow of the etchant may continue during the growth of the monocrystalline silicon rod or it may be discontinued a short time after the silicon halogenide gaseous mixture has been introduced.

3,679,471
METHOD FOR THE PRODUCTION OF ELECTRICAL RESISTOR BODIES, AND ELECTRICAL RESISTOR BODIES PRODUCED IN ACCORDANCE WITH SAID METHOD
Hugo Wyss, Rue des Cedres 7, Neuchatel, Switzerland
Filed Dec. 8, 1969, Ser. No. 882,874
Claims priority, application Switzerland, Dec. 10, 1968, 18,426/68
Int. Cl. H01c *7/00*
U.S. Cl. 117—201 5 Claims

A novel method for the production of electrical resistor bodies is disclosed, as are novel electrical resistor bodies produced by said method. The method and process of the instant invention contemplates the steps of embedding a poly-crystalline porous mixture of grains in a coherent matrix deposited in the pores of the mixture by a chemical reaction of vapors at high temperature, the source of such vapors being disposed outside the reaction zone and at a lower temperature than that in the reaction zone. The

matrix is deposited throughout the entire mixture and, during deposition, is doped if desired in a controlled manner through the addition of known doping agents and amounts thereof to the reacting vapors. While matrix is deposited throughout the entire mixture, it does not fill up the entire pore volume.



In the preferred inventive embodiment, the electrical resistor bodies so produced are heated in an inert atmosphere and at a higher temperature than that prevalent during the vapor deposition of the matrix such that the dopants are allowed to diffuse to certain known depths.

3,679,472

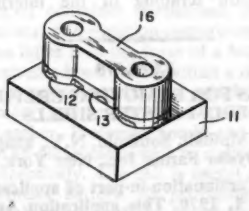
METHOD FOR BONDING A METAL PATTERN TO A SUBSTRATE

Gerald E. Crosby, Levittown, Pa., and Daniel J. Shanefield, Princeton, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Continuation-in-part of application Ser. No. 884,046, Dec. 15, 1969. This application July 16, 1970, Ser. No. 55,516

Int. Cl. B44d 1/18

U.S. Cl. 17—212 **27 Claims**



The bond between a metal film and a substrate is increased by employing an intermediate layer which effects a tenacious bond to the substrate. The propensity of such an intermediate layer to be extremely difficult, if not impossible, to etch without deleteriously damaging the film is eliminated by using a discontinuous intermediate layer. Electroplating of the metal film is facilitated by depositing a continuous conductive coating which can be etched without deleterious damage to the metal film onto the discontinuous intermediate layer.

3,679,473

METHOD OF MAKING A HEATING ELEMENT

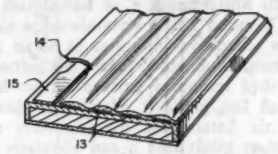
John K. Blatchford, St. Joseph, Edward C. Peterson, Benton Harbor, and Jan C. Burda, Eau Claire, Mich., assignors to Whirlpool Corporation

Filed Dec. 23, 1970, Ser. No. 100,875

Int. Cl. B44d 1/18

U.S. Cl. 117—212 **12 Claims**

A method of making a heating element such as a heated panel for a cooking oven comprising applying to a heat resistant base such as a metal panel a fired vitreous ceramic first coating, then applying over this first coating a fired vitreous ceramic second coating containing dispersed metal particles in electrical conducting contact with each other formed in said second coating by chemi-



cal reduction of a metal compound therein, and then, preferably, applying over this second coating a fired vitreous ceramic protective coating with the result that the second coating comprises an electrical conducting resistant heating layer that is protected by the ceramic protective coating.

3,679,474

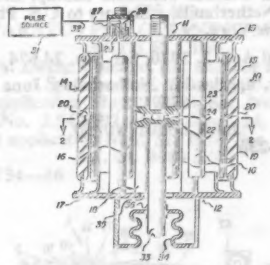
PERIODIC ELECTRODE STRUCTURE FOR VACUUM GAP DEVICES

Joseph A. Rich, Schenectady, N.Y., assignor to General Electric Company

Continuation-in-part of abandoned application Ser. No. 875,919, Nov. 12, 1969. This application Jan. 18, 1971, Ser. No. 107,511

Int. Cl. H01j 17/04

U.S. Cl. 313—217 **10 Claims**



Discloses vacuum gap devices including triggerable gap and switch devices in which a pair of electrode assemblies, each having a plurality of electrode elements which are parallel and/or normal to the same plane are assembled with opposed electrode members interleaved to form a periodic ring shaped structure. A current interrupting arc is initiated by a pair of butt-type arc-electrodes located centrally of the rod array.

3,679,475

METHOD FOR PRODUCING BORON-CARBON FIBERS

Malcolm Basche, West Hartford, Conn., Roy Fanti, Springfield, Mass., and Francis S. Galasso, Manchester, Urban E. Kuntz, East Hartford, and Richard D. Schile, Wethersfield, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

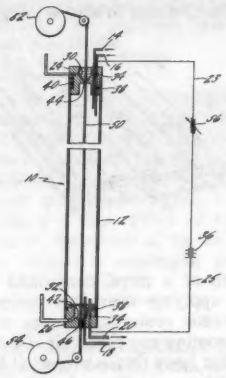
Filed Mar. 27, 1969, Ser. No. 811,072

Int. Cl. H01b 1/00; B44d 1/14, 1/18

U.S. Cl. 117—216 **3 Claims**

A chemical deposition process for producing continuous node-free filaments of boron over carbon by reduc-

ing a boron-containing gas, such as boron trichloride, on a resistively heated carbon substrate, the carbon substrate



being pretreated with graphite to prevent the formation of hot spots during deposition.

3,679,476

METHOD OF COATING SYNTHETIC RESIN BASE

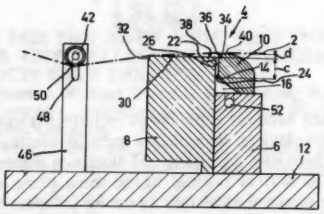
Gerard Willem van Oosterhout, Hendrikus Johannes Lemmen, and Cornelis Johannes Klomp, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 1, 1970, Ser. No. 24,674

Claims priority, application Netherlands, June 13, 1969, 6909118

Int. Cl. H01f *10/00*

U.S. Cl. 117—236 **5 Claims**



A method of coating a support base of a synthetic material, with a layer of lacquer for particular application in manufacturing magnetic tape. The lacquer is forced through a pouring slit into a pressure chamber where it is temporarily stored in contact with the support base. The support is guided along the stored lacquer under a tensile stress and the support with the adhering layer of lacquer is then guided along a smoothing side in such manner that the parts of the support in front of and behind the smoothing side form an angle so that the layer is equalized. The pressure in the pressure chamber can be controlled by controlling the angle, the tensile stress and the quantity of lacquer supplied per unit of time so that the thickness of the layer is also controlled.

3,679,477

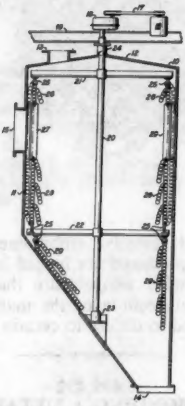
CHAMBER CLEANING DEVICE AND METHOD

Austin A. Zimmer, Elkridge, Md., assignor to W. R. Grace & Co.

Filed Aug. 20, 1970, Ser. No. 65,405

Int. Cl. B08b *9/00*

U.S. Cl. 134—8 **19 Claims**



A chamber cleaning device and method wherein the device has a rotatable member within the chamber, and pendent from the rotatable member one or more flexible chain members which are caused to contact the internal surfaces of the chamber on a rotation of the rotatable member. The contacting of the flexible chain member with the internal surfaces of the chamber effectively removes adhering substances from these surfaces by both a rapping and friction scraping of the internal chamber surfaces.

3,679,478

PROCESS FOR REMOVING CREPIDULA FROM OYSTER SHELLS

James Edward Mulhall, Southold, N.Y., assignor to Long Island Oyster Farms, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 77,326, Oct. 1, 1970. This application Apr. 26, 1971, Ser. No. 137,616

Int. Cl. A01k *61/00*; B08b *3/08*

U.S. Cl. 134—25 R **7 Claims**

The process for removing Crepidula from the shells of live oysters which preferably comprises immersing the oysters in a solution of from about 2% to about 11% of ammonium chloride in sea water (on a weight/volume basis) for a period between about 10 minutes and 8 hours.

3,679,479

WASHOUT-PRESERVATIVE FOR LITHOGRAPHIC PRINTING PLATES

Donald A. Ray and Richard E. Arnold, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Jan. 7, 1970, Ser. No. 1,285

Int. Cl. B08b *3/08*; C23g *5/02*

U.S. Cl. 134—40 **8 Claims**

A washout-preservative for removing a full charge of ink from a lithographic printing plate and conditioning and

protecting the printing plate during holdover between press runs of from several hours to several weeks comprises a hydrophilic colloid desensitizer, an ink solvent, and an image conditioner. The compositions can contain surfactants and other addenda.

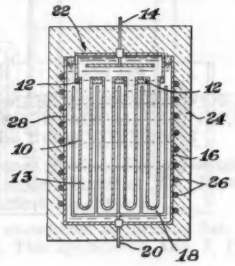
ERRATUM

For Class 136—46 see:
Patent No. 3,679,483

3,679,480
ELECTRICAL CELL ASSEMBLY

William E. Brown, Walnut Creek, and Robert G. Heitz and Charles A. Levine, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 567,587, July 25, 1966. This application May 8, 1969, Ser. No. 823,000
The portion of the term of the patent subsequent to Nov. 4, 1986, has been disclaimed
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 **8 Claims**



A cell for generating electrical energy is provided comprising a sealed container partitioned into anode and cathode chambers, said partition comprising an electrolyte-separator. The latter is in the form of a bundle of hollow, fine glass or ceramic fibers sealed within a common header. The fibers are sealed at the end which penetrates the cathode chamber and are in open communication with the anode chamber. Preferred anode and cathode materials comprise an alkali metal such as sodium or potassium and sulfur respectively. The cell is useful as either a primary or secondary battery. By providing for the introduction of alkali metal and the withdrawal of catholyte during operation, it can be readily modified to provide a fuel cell.

3,679,481
PROCESS OF MANUFACTURING SINTERED CARRIER TYPE NEGATIVE ELECTRODES FOR ALKALINE STORAGE CELLS

Emile Jean Lucien Pinard, Bordeaux, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,867
Claims priority, application France, Mar. 26, 1970, 10,933
Int. Cl. H01m *35/18*
U.S. Cl. 136—24 **15 Claims**

A method of preparing negative electrodes for alkaline storage cells by incorporating active electrode material into porous metal carriers, for example, of sintered nickel by impregnating the carrier with an acidified cadmium salt solution, then precipitating cadmium hydroxide and incidentally nickel hydroxide in its pores by immersion in an alkali metal solution, then washing and drying the precipitate bearing carrier, thereafter heating such carrier at temperatures ranging from 200 to 500° C. in air or inert atmosphere for a selected period of time to convert the nickel and cadmium hydroxides into respective oxides, thereafter rehydrating the heated oxide bearing carrier by immersion in an aqueous liquid such as water or an aqueous solution of a nickel salt or an alkali metal hydroxide maintained at a temperature of approximately 80° C. for approximately 1 to 2 hours. This converts the cadmium oxide to cadmium hydroxide without substantially affecting the nickel oxide. Subsequently washing the so-treated carrier bearing cadmium hydroxide and such nickel oxide and finally washing and finally drying the electrode preferably in carbonated air. The resultant negative electrode has a materially reduced amount of deleterious or parasitic positive active material and increased porosity and flexibility as compared with like negative electrodes produced by conventional carrier impregnating and precipating procedure. Negative electordes resulting from the process of this invention and alkaline storage cells with such negative electrodes are also disclosed.

3,679,482
IRON ELECTRODE

Carl C. Hardman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

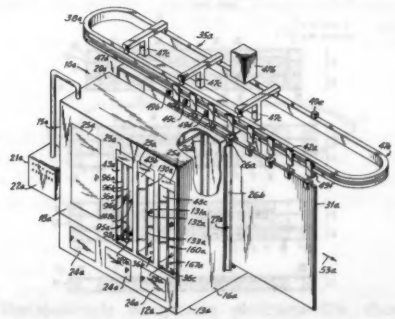
Filed Feb. 5, 1971, Ser. No. 112,974
Int. Cl. H01m *43/04*
U.S. Cl. 136—25 **4 Claims**

A negative electrode plate, for a battery containing at least one positive and one negative electrode plate, with electrolyte contacting the plates, is made by depositing a soluble cobalt salt in a sulfur activated iron negative electrode plate and reacting the deposit with alkali hydroxide.

3,679,483
APPARATUS FOR CLEANING MEMBERS WITH FLUIDS

Leon A. Zweig, Chicago, Ill., assignor to Bell Tech Systems, Inc., Chicago, Ill.

Original application May 2, 1968, Ser. No. 726,081, now Patent No. 3,542,592, dated Nov. 24, 1970. Divided and this application Mar. 31, 1970, Ser. No. 24,201
Int. Cl. B08b *3/02*
U.S. Cl. 134—46 **9 Claims**



The present invention discloses apparatus for cleaning a variety of objects, such as printing plates or dies, having thereon foreign deposits, with a cleaning fluid. The equipment includes a chamber within which the member to be cleaned is supported and sequentially sprayed with cleaning fluid under controlled pressure and any remaining foreign deposits removed by a rinsing

fluid. The fluids are supplied by nozzles either mounted in fixed spaced relation to the supported member or manually controlled by a spray gun for directing the fluid. Apparatus for continually supplying the cleaning and rinsing fluids through the nozzle of the spray gun or fixed mounted nozzles is provided with a complete system which automatically controls the relationship of the temperature, pressure, supply, recirculating and other automatically inter-related operations of the system. The cleaning fluid may also be energized with sonic energy waves to further enhance its cleaning effectiveness.

3,679,484

LITHIUM-THALLIUM (ic) OXIDE ORGANIC ELECTROLYTE CELL

Arabinda N. Dey, Needham, and Robert W. Holmes, Boston, Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed July 15, 1970, Ser. No. 55,169
Int. Cl. H01m 23/02
U.S. Cl. 136—83 R 6 Claims

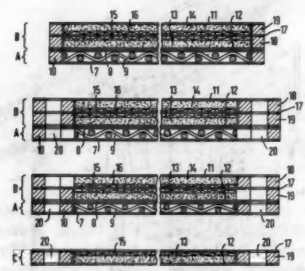
This invention relates to a novel high energy density primary battery comprising at least one positive plate composed of a mixture of thallium (ic) oxide (Tl_2O_3) and a conductive diluent, and at least one negative plate having a metal selected from the group of light metals, said plates being disposed in an electrolyte comprising an organic solvent selected from the group consisting of tetrahydrofuran, N-nitrosodimethylamine, dimethyl sulfite, propylene carbonate, gamma-butyrolactone, dimethyl carbonate, dimethoxy ethane, acetonitrile, dimethyl sulfoxide, dimethyl formamide and the mixtures thereof, and having dissolved therein soluble salts of the light metals, for example, the perchlorates, hexafluorophosphates, tetrafluoroborates, tetrachloroaluminates, hexafluoarsenates of lithium.

3,679,485

FUEL CELL BATTERY FOR REACTING GASEOUS REACTANTS IN FUEL CELLS OPERATED WITH LIQUID ELECTROLYTE

Hans Kohlmuller, Erlangen, and Dieter Kuhl, Bubenreuth, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 9, 1970, Ser. No. 70,766
Claims priority, application Germany, Sept. 11, 1969, P 19 45 946.2
Int. Cl. H01m 27/00
U.S. Cl. 136—86 R 7 Claims



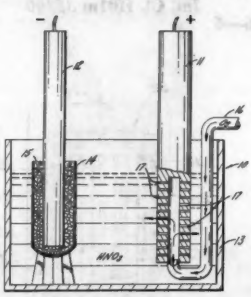
Fuel cell battery for reacting gaseous reactants in fuel cells operated with liquid electrolyte includes a stack of alternatingly superimposed components A and B with a component C at the respective ends of said stack, the stack being embedded in a casing of molding resin, the component A comprising a pair of diaphragms with a support frame and sealing frame sandwiched therebetween, the component B comprising a pair of diaphragms with bipolar electrodes and sealing frames sandwiched therebetween, and the component C comprising a diaphragm and a contact plate with an electrode, a spacer grid and a sealing frame sandwiched therebetween, the sealing frames, diaphragms and contact plates being provided with fins and formed with bores for supplying the reactants to and discharging the same from the battery, and the sealing frames being firmly bonded to the diaphragms and contact plates of the respective components; and method of producing the fuel cell battery.

3,679,486

FUEL CELL AND METHOD OF OPERATING SAID CELL

Wayne A. Proell, Seymour, Ind., assignor to American Hydrocarbon Company, Salt Lake City, Utah

Filed Aug. 13, 1969, Ser. No. 849,655
Int. Cl. H01m 27/00
U.S. Cl. 136—86 E 13 Claims



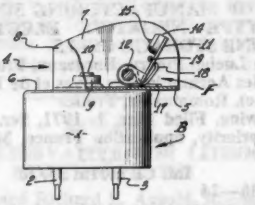
A fuel cell with its anode comprising a carbon electrode and fossil fuel, its cathode a porous carbon electrode through which molecular oxygen is introduced into the fuel cell, and employing nitric acid as an electrolyte for the simultaneous production of electricity and humates. There is also disclosed an electrochemical process for the conversion of the chemical energy into electrical energy while simultaneously preparing a soil enriching agent from a fossil fuel.

3,679,487

THERMAL BATTERY WITH PERCUSSION CAP

Jan R. Coyle, 514 E. Ghent, San Dimas, Calif. 91773

Filed Feb. 19, 1969, Ser. No. 800,555
Int. Cl. H01m 17/06
U.S. Cl. 136—90 1 Claim



A thermal battery and activator in which a percussion cap is affixed to the thermal battery, and a striker is held initially in an inoperative position by a removable pin, the striker being forced toward the percussion cap by a spring when the pin is removed.

3,679,488

SILVER OXIDE-MAGNESIUM CELL OR ELECTROCHEMICAL GENERATOR

Francis Jean Dalard and Jan Witold Augustinsky, Grenoble, and Jean-Claude Sohm, Meylan, France, assignors to Société des Accumulateurs Fixes et de Traction (Société Anonyme), Romainville, France

Filed Oct. 18, 1970, Ser. No. 79,058

Claims priority, application France, Oct. 15, 1969, 6935369

Int. Cl. H01m *11/00*

U.S. Cl. 136—100 M 25 Claims

The invention relates to an electrolyte for a cell having electrodes based respectively upon magnesium and preferably silver oxide. Other electrodes in lieu of silver oxide are also disclosed as useful, e.g. silver chloride, copper chloride or oxygen or air electrodes. In accordance with the invention, the electrolyte comprises an aqueous solution of sodium or lithium metaborate and sodium or lithium perchlorate and has a pH in the neighborhood of 11. In certain conditions, additives to the electrolyte solution, e.g. sodium tartrate improve operation of the cell in rapid discharge. The invention is applicable notably to rapidly discharging electrochemical generators.

3,679,489

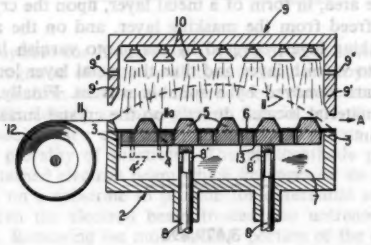
PROCESS FOR MASS PRODUCTION OF BATTERIES OF ELECTROCHEMICAL GENERATORS OF STACKED FLAT CONSTITUENTS

Jean Firmin Jammet, Poitiers, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

Continuation of abandoned application Ser. No. 786,990, Dec. 26, 1968. This application Aug. 5, 1971, Ser. No. 169,472

Int. Cl. H01m *31/00*

U.S. Cl. 136—175 12 Claims



Batteries are mass produced by initial formation from plastic material of trays of substantially inverted truncated pyramidic form. These formed trays are perforated at their bottoms and have adhesive applied around the openings on internal bottom faces of the trays. Then, the perforated trays have mounted therein successively a negative duplex electrode, for example, of zinc whose lower face is covered with a conductive coating, the superposed separator impregnated with electrolyte lying over the upper face of the electrode and a depolarizer positive active material is superposed over each separator. The filled trays are severed and nested successively. Then, respective positive and negative contact terminals are applied at the opposite ends of the battery assembly. Thereafter, the so-formed battery assembly is mounted in stretched outer sheath of extensible plastic material.

3,679,490

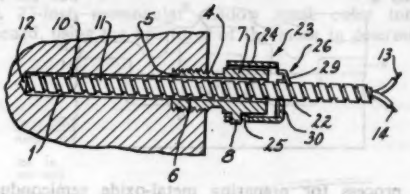
ADJUSTABLE DEPTH IMMERSION TEMPERATURE SENSING DEVICE

Roy R. Finkbiner, Indianapolis, Ind., assignor to Barber-Colman Company, Rockford, Ill.

Filed July 10, 1970, Ser. No. 53,853

Int. Cl. H01v *1/02*

U.S. Cl. 136—221 12 Claims



A thermocouple enclosed in a protective flexible spiral overlap cable is adjustable as to depth of immersion in a well by means of a bayonet cap threaded on the cable and engageable with a coupling pin in fixed relation to the well to releasably retain the thermocouple pressed against the closed end of the well.

3,679,491

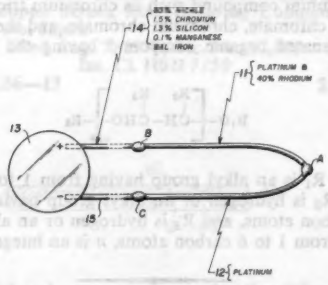
PLATINUM-RHODIUM VS. PLATINUM THERMOCOUPLE HAVING BASE METAL COMPENSATING LEADS

Edward D. Zysk, Livingston, and Eugene E. Osovitz, Englishtown, N.J., assignors to Engelhard Minerals & Chemicals Corporation

Filed Feb. 18, 1971, Ser. No. 116,437

Int. Cl. H01v *1/02*

U.S. Cl. 136—236 5 Claims



A thermocouple comprising platinum-40% rhodium vs. platinum as thermocouple legs, with each leg having connected thereto a base metal compensating lead closely approximating the E.M.F. output of its respective thermocouple leg, measured against a common standard thermocouple element, over the range of 100° C. to 1000° C. One of the leads being composed of 60% Ni, 15% Cr, 1.3% Si, 0.1% Mn and the balance Fe. The other lead being composed of 95.31% Ni, 4.49% W and 0.2% of at least one of Mn and Si.

3,679,492

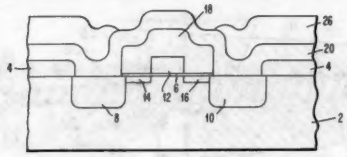
PROCESS FOR MAKING MOSFET'S

Frank F. Fang and Alan B. Fowler, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 23, 1970, Ser. No. 21,562

Int. Cl. H01l 7/54

U.S. Cl. 148—1.5 3 Claims



A process for preparing metal-oxide semiconductor devices (MOSFET's) using ion implantation is described wherein aluminum source and drain contacts are added after ion implantation through a highly refractory metal gate so that very high temperature annealing can be used. If the aluminum contacts are put down before the high temperature annealing, not only does a reaction between the aluminum and thin oxide channel region of the MOSFET occur, but ohmic contacts at the source and drain deteriorate, resulting in defective devices.

3,679,493

GLYCOL ETHER-CHROMIUM CORROSION RESISTANT COATINGS FOR METALLIC SURFACES

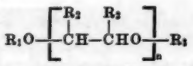
John Paul Gerhardt Beiswanger, Easton, and Assadullah Nassry, Bethlehem, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Mar. 11, 1970, Ser. No. 18,762

Int. Cl. C23f 7/26, 11/16

U.S. Cl. 148—6.16 21 Claims

A process and composition for increasing the resistance to corrosion of a metallic surface, which process comprises contacting said metallic surface with a composition obtained by mixing in the presence of water a water soluble chromium compound such as chromium trioxide, ammonium chromate, chromium chromate, and the like, and an oxygenated organic compound having the following formula:



(I)

wherein R_1 is an alkyl group having from 1 to 6 carbon atoms, R_2 is hydrogen or an alkyl group having from 1 to 6 carbon atoms, and R_3 is hydrogen or an alkyl group having from 1 to 6 carbon atoms, n is an integer of from 1 to 4.

3,679,494

NITRIDED HAFNIUM-TANTALUM ALLOYS AND METHOD OF MAKING THE SAME

Vernon L. Hill, Niles and Harry R. Nichols, Chicago, Ill., and Alan L. Hess, Worcester, Mass., assignors to IIT Research Institute, Chicago, Ill.

No Drawing. Filed Apr. 30, 1969, Ser. No. 820,648

Int. Cl. C22c 27/00; C23c 11/14

U.S. Cl. 148—20.3 11 Claims

Improved alloys of hafnium-tantalum suitable for use as a cutting tool and the method of making the same. The alloys include a nitrided case layer formed by nitriding at temperatures between 2500° F. and 4000° F. until the nitrided layer is at least 2 mils thick.

3,679,495

METHOD OF PRODUCING ELECTRONIC PLANAR-TYPE DEVICES APPLICABLE FOR HIGH FREQUENCY GERMANIUM PLANAR TRANSISTORS

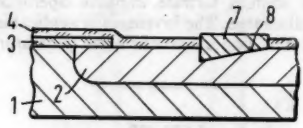
Wolfgang Schembs, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 7, 1969, Ser. No. 824,026

Claims priority, application Germany, May 7, 1968, P 17 64 269.2

Int. Cl. H01l 7/46

U.S. Cl. 148—179 12 Claims



Described is a method of producing a plurality of microsemiconductor components according to the planar method, more particularly, high frequency germanium planar transistors or integrated circuits, containing germanium planar transistors. The conventional method steps are employed up to the production of the emitter region. The process is characterized in that the emitter region is produced in the semiconductor body in a manner whereby a window, corresponding to the area of the emitter region, is etched into the masking layer which is produced on the semiconductor crystal surface after the base diffusion. The emitter material is subsequently applied over the entire area, in form of a metal layer, upon the crystal surface, freed from the masking layer, and on the adjacent masking layer, covered by the photo varnish layer. The photo varnish layer and thus the metal layer located thereon are removed by a suitable solvent. Finally, the emitter material located directly on the crystal surface is alloyed into the semiconductor body.

3,679,496

SEMICONDUCTOR DEVICES COMPRISING A HETEROJUNCTION

Ties Siebolt Te Velde and Sybrandus van Heusden, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 27, 1970, Ser. No. 6,066

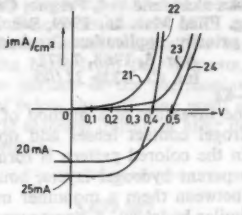
Claims priority, application Netherlands, Feb. 1, 1969, 6901662

Int. Cl. H01l 7/44

U.S. Cl. 148—188 11 Claims

A method of forming a heterojunction in a semiconductor device wherein a substrate of a polycrystalline layer of a II–VI material coated with a thin layer of a halide of copper, silver and/or gold is heated to effect a solid-state reaction wherein a halide layer of the II–VI material is formed in the thin layer and at least one of the metals copper, silver, and gold penetrates into the

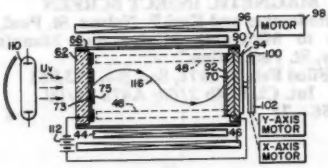
substrate to form a compound with the VI material which provides a heterojunction with the substrate. The thin layer of the halide of the II material is subsequently removed with a solvent thereof.



3,679,497
ELECTRON BEAM FABRICATION SYSTEM AND PROCESS FOR USE THEREOF

Robert M. Handy, Export and Stephen J. Angello, Paul R. Malmberg, and Terence W. O'Keeffe, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 24, 1969, Ser. No. 869,229
Int. Cl. B44c 1/22; H01j 37/26; B23p 1/00
U.S. Cl. 156—2 **15 Claims**



A system for fabrication of patterns in substrates such as integrated circuits on silicon wafers, employs a scanning electron microscope to produce a photocathode having the desired surface pattern therein and the photocathode is then employed to produce replicate patterns on a plurality of substrates. The photocathode produces a patterned electron beam which impinges on an electron resist on a substrate to provide for differential solubility between the electron beam treated and untreated resist areas. Removing the more soluble portion of the electron resist after treatment by the photocathode, exposes the substrate surface which is then altered either physically or chemically. One or more highly precise patterns both in their location and configuration, may be produced on the surface of a substrate by applying a series of successive electron resists to the substrate and using a plurality of photocathodes.

3,679,498
METHOD FOR MOLDING FORMS ON VARIOUS SUBSTRATES

Anton M. Andersen, 1 Highland Ave., Demarest, N.J. 07627

Filed May 14, 1970, Ser. No. 37,197
Int. Cl. B32b 31/14
U.S. Cl. 156—3 **16 Claims**

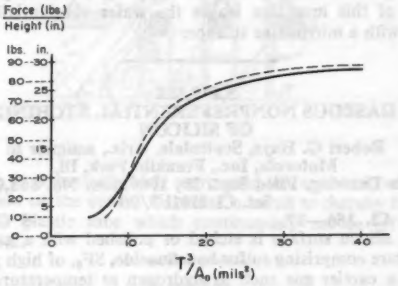
A method for molding forms on substrates so that the forms and substrates are a homogeneous unit and whereby the forms originate as shaped parts or sheet stock in the raw state.

3,679,499
PROCESS OF BACK ETCHING A PERFORATED METAL MASK FOR COLOR TV TUBES

Thomas C. Minzenberger, Oak Lawn, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 30, 1970, Ser. No. 7,281
Int. Cl. C23f 1/02, 17/00
U.S. Cl. 156—7 **2 Claims**

A 23-inch rectangular shadow mask color tube is screened, using the apertures of the mask in determining

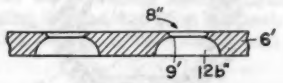


the position and dimensions of the phosphor dots, and then the mask is re-etched to enlarge the diameter of its apertures, relative to the phosphor dots, to a value A_0. The thickness T of the mask and the parameters of the re-etch are determined so that the quantity T^3/A_0 has a value of approximately 13 or greater.

3,679,500
METHOD FOR FORMING PERFORATIONS IN METAL SHEETS BY ETCHING

Nobuzo Kubo and Takeshi Ito, Hikone, Japan, assignors to Dainippon Screen Manufacturing Company, Limited, Kyoto, Japan

Filed Aug. 7, 1970, Ser. No. 62,009
Int. Cl. H01l 7/50
U.S. Cl. 156—11 **2 Claims**



A method and apparatus for perforating thin sheet or web material as in the manufacture of various thin metal screen products. The method of the invention generally comprises the following steps: Providing on opposite side surfaces of a metal sheet or web a coating of etch-resistant pattern film material having apertures of desired configuration; effecting a first slight etching from one side or both sides of the sheet or web stock; forming slight depressions in the web surfaces in the areas uncovered by the apertures of the etch-resistant coatings; providing a second etch-resistant coating over the entire face of one of the slightly etched faces of the web material; effecting a second etching action on that side of the web opposite

from the second coating, such as to form the perforations, and then removing the etch-resistant coatings and pattern film material from the perforated web or sheet material.

3,679,501

METHOD OF POLISHING GALLIUM PHOSPHIDE

Richard J. Chicotka, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,059
Int. Cl. C09g *1/00*; H01l *7/00*
U.S. Cl. 156—17 10 Claims

A method of polishing gallium phosphide used in the manufacture of semiconductive devices. A gallium phosphide wafer is immersed in a solution consisting of from about 15 to 20 parts by volume of concentrated hydrofluoric acid and from about 3 to about 0.5 parts of concentrated nitric acid. Treatment by the $HF\text{-}HNO_3$ solution of this invention leaves the wafer substantially pit free with a mirror-like surface.

3,679,502

GASEOUS NONPREFERENTIAL ETCHING OF SILICON

Robert G. Hays, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

No Drawing. Filed Sept. 29, 1969, Ser. No. 862,039
Int. Cl. H01l *7/00*
U.S. Cl. 156—17 5 Claims

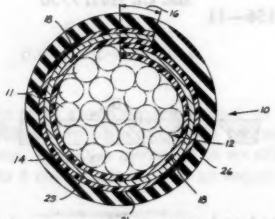
A silicon surface is etched or polished with a gaseous mixture comprising sulfur hexafluoride, SF_6, of high purity and a carrier gas such as hydrogen at temperatures between 950° C. and 1250° C. The sulfur hexafluoride should have a low nitrogen concentration with a preferred nitrogen concentration being less than 200 parts per million by weight.

3,679,503

METHODS OF MAKING SHIELDED ELECTRICAL CABLE

Matthew Raymond Dembiak, Clifton, N.J., and George H. Webster, Timonium, Md.; said Webster assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., said Dembiak assignor to Western Electric Company, Incorporated, New York, N.Y.

Original application Mar. 24, 1969, Ser. No. 809,547, now Patent No. 3,551,586, dated Dec. 29, 1970. Divided and this application June 11, 1970, Ser. No. 45,343
Int. Cl. H01b *13/10*
U.S. Cl. 156—54 6 Claims



A metallic tape, having a release agent material applied selectively in at least one longitudinal strip on one major surface thereof, has a coating of adhesive over the strip and both major surfaces. The tape is wrapped longitudinally about a cable core, with the one major surface facing the core, to form an overlapped seam which is then heated to bond the adhesive on the one major surface to the adhesive on the other major surface. The strip of release agent material may be easily removed together with the overlying adhesive to bare the metal to facilitate grounding at a splice location.

3,679,504

METHOD OF FORMING COLOR EFFECTS IN HYDROGEL CONTACT LENSES AND OPHTHALMIC PROSTHESES

Otto Wichterle, Prague, Czechoslovakia, assignor to Ceskoslovenska akademie ved, Prague, Czechoslovakia

No Drawing. Filed Mar. 26, 1969, Ser. No. 810,843
Claims priority, application Czechoslovakia, Apr. 5, 1968, 2,571
Int. Cl. B32b *31/00*
U.S. Cl. 156—62 11 Claims

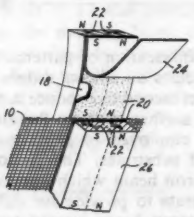
Object of the invention is a method of forming color effects in hydrogel contact lenses and ophthalmic prostheses, wherein the colored pattern is formed between at least two transparent hydrogel layers, bound together by polymerizing between them a monomer mixture forming the same or similar hydrogel. A homogeneous transparent thin covering layer of hydrogel is first formed on a regular surface of a smooth pad. The desired colored pattern is then formed between it and the concave surface of a lens or that of an ophthalmic prosthesis, being either laid between them as a thin foil or created on either the said concave surface or said covering layer, the last mentioned embodiment being preferred. The bond between the lens or prosthesis and the covering layer is realized by putting a drop of initiated monomer mixture between them and pressing them slightly together so that the excess of the monomer mixture is expressed. The colored pattern is preferably formed using colors, dyestuffs or pigments which are insoluble in water and in monomer mixture. The finished lens or prosthesis is then removed from the pad by swelling the whole in a swelling liquid such as water or alcohol and kept in sterile physiologic solution.

3,679,505

MAGNETIC INSECT SCREEN

Philip D. Hinderaker and Karl E. Nelson, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 9, 1971, Ser. No. 113,951
Int. Cl. E04b *2/00*; A47b *23/00*
U.S. Cl. 156—71 6 Claims



A method for removably mounting an insect screen over a vehicle window opening with a pair of flexible magnetic strips which are self-aligning and between which the edges of the insect screen are sandwiched around the vehicle window opening.

3,679,506

TRANSFER COATING PROCESS

Anthony Joseph Burgess, Alan Charles Eagles, and Margaret Lillian Steel, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 26, 1969, Ser. No. 827,967
Claims priority, application Great Britain, June 11, 1968, 27,779/68; Aug. 16, 1968, 39,267/68
Int. Cl. B31f *00/00*; B32b *31/00*; B44c *00/00*
U.S. Cl. 156—209 15 Claims

A process for the production of a painted planar polymeric article which comprises pressing an advancing band of thermoplastic polymeric material the surface of which

is in heat softened form against a paint releasing substrate moving in the same direction and at the same speed as said band and to which has been applied a fluid paint coating and substantially dried, maintaining contact between the advancing band and the moving painted substrate for sufficient distance to effect transfer of the paint coating from the substrate to the band and thereafter parting the band from the substrate, and causing or allowing the surface of the thermoplastic polymeric material to cool below the softening point of the thermoplastic polymeric material during or after its contact with the painted substrate.

3,679,507

METHOD OF PRODUCING A COATED GLASS FIBER STRAND

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation

Continuation of application Ser. No. 4,160, Jan. 9, 1970, which is a continuation of application Ser. No. 563,010, June 20, 1966, which in turn is a continuation-in-part of application Ser. No. 234,639, Nov. 1, 1962. This application Dec. 24, 1970, Ser. No. 101,397

Int. Cl. D06n *11/00*

U.S. Cl. 156—148 **8 Claims**

A method of coating glass fibers which consists of applying a primary size consisting essentially of water and a wetting agent to the individual fibers, forming the fibers into a strand, drying the strand, and applying a different, but compatible second coating to the strand, whereby the second coating penetrates interstices between the fibers adjacent to the surface only of the strand. This leaves a highly mobile core. The method makes possible the constant utilization of forming equipment, which is stabilized for greater efficiency of operation and perfection of product.

3,679,508

METHOD AND APPARATUS FOR MAKING PLASTIC TUBING

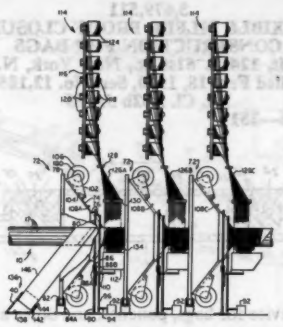
Joseph C. Weidel, Bonita, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Continuation-in-part of application Ser. No. 499,572, Oct. 21, 1965. This application Apr. 10, 1969, Ser. No. 814,905

Int. Cl. B65h *81/00*

U.S. Cl. 156—173 **11 Claims**

Peripheral segments of a cylindrical mandrel are reciprocally and successively moved in an axial direction on the mandrel as the latter is rotated. A tape is wrapped around the peripheral segments as the mandrel is rotated, and the reciprocal movement of said segments causes this tape to advance toward one end of the mandrel. As the tape advances it is alternately wound with filaments which are coated with resin and filaments which are uncoated. The tape and filament windings thereon are advanced by the reciprocal movement of the peripheral mandrel segments to a heater which surrounds the mandrel, where the resin on the coated filaments is cured to thereby form a rigid plastic tube which continuously moves off the mandrel.



3,679,509

PROCESS FOR SEALING LAMINATED MATERIALS

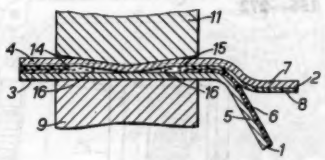
Josef Frans Fielibert, Zevenaar, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,660

Claims priority, application Great Britain, Dec. 24, 1968, 61,348/68

Int. Cl. B32b *31/20*

U.S. Cl. 156—182 **5 Claims**



A method of sealing laminated materials, particularly as used in food containers, in which a jaw shape is used which causes the contacting sealable layers to rupture along a parting line and then form heat seals on each side of the parting line, so giving a double seal of improved reliability.

3,679,510

WEATHER RESISTANT MOLDABLE LAMINATE

Kenneth E. Conley, Matthews, and Thomas M. Ellison, Charlotte, N.C., assignors to Riegel Paper Corporation, New York, N.Y.

No Drawing. Filed Aug. 6, 1970, Ser. No. 61,827

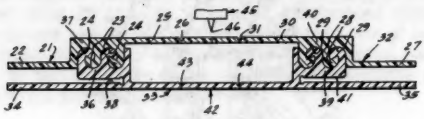
Int. Cl. B29f *5/00*; B29g *5/00*; B32b *27/00*

U.S. Cl. 156—245 **6 Claims**

A low cost composite material having properties of high strength, easy moldability and excellent outdoor weathering characteristics, as well as a smooth and decorative outer surface is disclosed. The new composite material includes an outer layer of clear, reverse printed polyvinyl fluoride film adhesively bonded to a thermoplastic layer, which in turn is joined to a reinforced polyester base stratum. The exposed thermoplastic surface of

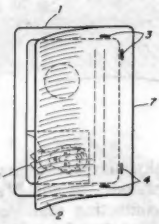
the polyvinyl fluoride-thermoplastic laminate is joined to the reinforced polyester base stratum during curing and molding of the polyester material without the use of a laminating adhesive.

3,679,511
FLEXIBLE PILFER PROOF CLOSURE CONSTRUCTION FOR BAGS
Steven Ausnit, 124 E. 61st St., New York, N.Y. 10021
Filed Feb. 18, 1970, Ser. No. 12,185
Int. Cl. B32b *31/26*
U.S. Cl. 156—251 **8 Claims**



Closure device for bags, pouches, and other articles, consisting of two outer and one inner interengaging webs of resilient, flexible material, said webs having ribs and grooves therein shaped complementarily to interlock with each other, the two outer webs having end portions which are brought together and merged with the inner web into a heat sealed bead, with each web having lines of weakness formed therein in close proximity to the bead whereby said web can be torn open to provide access to its interlocking elements and said bead can also be readily severed to form separate closure tubes.

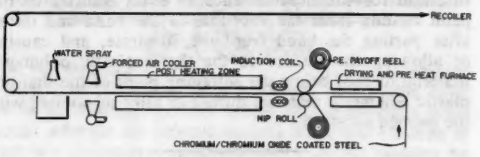
3,679,512
LAMINATED CARD ENVELOPE
Frederick W. Macone, Carlisle, Mass., assignor to Avant Corporation, Lincoln, Mass.
Original application Apr. 19, 1967, Ser. No. 632,072, now Patent No. 3,526,567. Divided and this application May 20, 1970, Ser. No. 39,035
Int. Cl. B32b *31/20*; G09f *3/02*
U.S. Cl. 156—272 **2 Claims**



This disclosure illustrates a novel envelope for receiving and properly orienting a data card positioned within the envelope which is thereafter subjected to heat and pressure to produce a composite, multilayered laminated card.

3,679,513
PROCESS FOR APPLYING A POLYMERIC FILM TO A STEEL SUBSTRATE
Ramon L. Addinall, Stoney Creek, Ontario, William T. Lewis, Burlington, Ontario, and Otokar Mudroch, Hamilton, Ontario, Canada, assignors to The Steel Company of Canada Limited, Hamilton, Ontario, Canada
Filed May 6, 1970 Ser. No. 35,102
Int. Cl. C09j *5/06*
U.S. Cl. 156—309 **9 Claims**

A method of applying a film of lower polyolefin or film of a copolymer of a major amount of a lower olefin with a minor amount of a copolymerizable monomer having polar functional groups to a steel substrate which involves generation of an intermediate layer of chromium/chromium oxide on the substrate and then application of the



polyolefin film during a pre-determined heating cycle is described. The method permits high line speeds in a continuous process. The product exhibits excellent resistance to corrosion and delamination.

3,679,514
PROCESS FOR IMPROVING THE PRODUCTION OF A LAMINATED PLASTIC ID CARD
Roger J. Kuhns, Lincoln, Mass., assignor to Avant Incorporated, Lincoln, Mass.
No Drawing. Filed Aug. 27, 1969, Ser. No. 853,515
Int. Cl. C09j *5/06*
U.S. Cl. 156—309 **2 Claims**

A process for eliminating die cutting of finished laminated plastic ID cards by providing top and bottom protective sheets having the exact dimensions of the finally produced card and utilizing sparse amounts of adhesive for laminating a data card between the protective top and bottom sheets.

3,679,515
SELF-BONDED TISSUE-FIBER LAMINATE PROCESS
A. Earl Capell, Hendersonville, N.C., and Leroy E. Wilson, Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
No Drawing. Filed Sept. 3, 1969, Ser. No. 855,017
Int. Cl. C09j *5/06*
U.S. Cl. 156—309 **5 Claims**

A process for joining independent fabric structures comprised of a web of light weight creped cellulose wadding, a layer of oriented fibers, and an intermediate layer of substantially cured, thermoplastic adhesive. The process comprises (1) preparing a laminate consisting essentially of at least two fabric structures positioned such that a portion of the cellulose webs of each of the structures are in overlapping contact, (2) while, maintaining the laminate at a temperature of at least 300° F., applying pressure to the laminate to cause a portion of the intermediate layer of substantially cured, thermoplastic adhesive in each of said structures to flow through its own cellulose web and into and through the cellulose web of the structure in contact therewith, and (3) cooling the laminate.

3,679,516
PROCESS FOR PRODUCING AN AIR-IMPERVIOUS TIRE FABRIC
James Newton McGee, Pleasant Garden, and Thomas Franklin Griffin, Kernersville, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.
Filed Apr. 3, 1969, Ser. No. 813,184
Int. Cl. C09j *5/04*
U.S. Cl. 156—315 **6 Claims**

A process for preparing an air-impervious tire fabric which comprises padding the fabric at pressures of from 1 to 20 p.s.i.g. with an aqueous resorcinol-formaldehyde/latex composition, where solids content is in the range of 32–43% by weight, partially drying at a temperature of

from 125 to 175° F. the thus padded fabric in the relaxed state to a moisture content of 5–15%, then further padding the partially dried fabric with aqueous resorcinol-

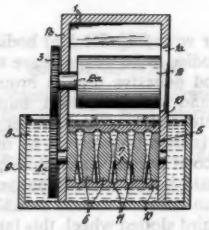
formaldehyde/latex composition having a solids content in the range of 20–43% by weight and drying and curing the thus treated fabric at a temperature of from 200 to 450° F.

3,679,517

APPARATUS FOR ETCHING SEMICONDUCTOR BODIES

Reinhard Schulten, Weissach, and Hartmut Michel, Vaihingen, Enz., Germany, assignors to Robert Bosch, G.m.b.H., Stuttgart, Germany

Filed Mar. 25, 1970, Ser. No. 22,627
Claims priority, application Germany, Mar. 27, 1969, P 19 15 714.3
(Filed under Rule 47(b) and 35 U.S.C. 118)
Int. Cl. C23f *1/02*
U.S. Cl. 156—345 **11 Claims**



An apparatus for etching semiconductor bodies comprises a receptacle which accommodates a bath of etching fluid. A drum is mounted for rotation in the etching fluid about an at least substantially horizontal axis and is driven by drive means. Partitions separate the interior of the drum into a plurality of axially arrayed cells each of which extends transversely of the axis and has a cross-sectional area divergent from the region of the axis in radially outward direction, defining with the inner periphery of the drum a concavely curved guide path which annularly surrounds the axis and along which the semiconductor bodies to be etched travel in an orbit about the axis.

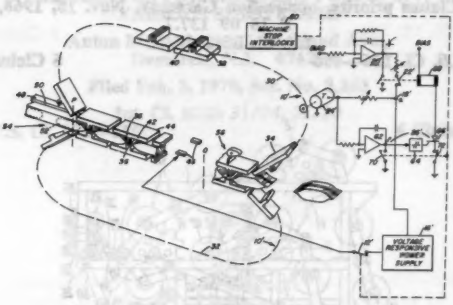
3,679,518

HEATER CONTROL APPARATUS FOR PACKAGING MACHINERY

Richard C. Andler, Rochester, N.Y., and Harley B. Keck, Greeley, Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,510
Int. Cl. G05d *23/19*; H05b *1/02*
U.S. Cl. 156—351 **8 Claims**

A heater control circuit for use in packaging thermoplastically wrapped articles is disclosed. The circuit computes the time that electrical power is removed from a packaging machine heater; and when power is re-applied to such heater, the power level is set in accordance with such computed time, thereby to compensate for the cool-



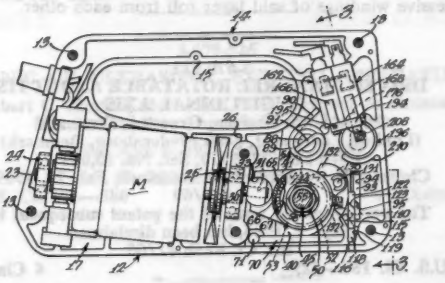
down of the heater. In a preferred form of the invention, the computing is by means of an exponential clock that has a time constant similar to the cool-down time constant of the heater.

3,679,519

CONTROL SYSTEM FOR APPARATUS FOR FRICTION-FUSING OVERLAPPING PORTIONS OF A THERMOPLASTIC STRAPPING LIGATURE

Robert J. Frey, Mount Prospect, Ill., assignor to Signode Corporation

Filed June 16, 1970, Ser. No. 46,591
Int. Cl. B32b *31/20*
U.S. Cl. 156—359 **12 Claims**



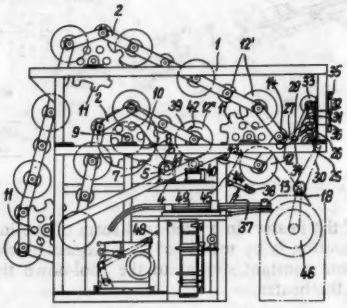
The system disclosed herein is adapted to control the overall duration of the operating cycle of a tool for friction-fusing overlapping portions of a thermoplastic strapping ligature. The operating cycle that is controlled includes the withdrawing of the supply end of the strapping material to tension a loop about a package and the oscillation of a strap gripping member to produce the frictional heat for interface melting and subsequent joinder. The control system includes first and second switches connected in a series circuit with an electric motor, with a first switch being normally closed and a second switch being normally open. A single operating means in a form of a manually engageable push button simultaneously actuates the first and second switches, with the first switch immediately returning to the closed position when the push button is released, and with the second switch having a timer connected thereto so that it returns to the first or open position only after a fixed time interval has elapsed during which the motor is energized.

3,679,520

APPARATUS FOR FEEDING FABRIC AND RUBBER INSERTS TO A TIRE BUILDING DRUM

Manfred Aust and Gerhard Smuda, Hamburg, Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Nov. 12, 1969, Ser. No. 875,798
Claims priority, application Germany, Nov. 15, 1968, P 18 09 137.7
Int. Cl. B29h *17/20*
U.S. Cl. 156—406 6 Claims



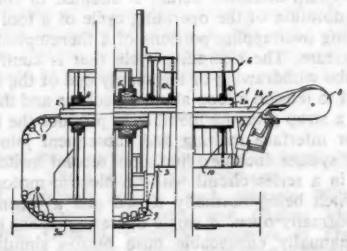
An apparatus for feeding fabric and rubber layers for a tire to a tire building drum of a tire building machine with a plurality of groups of rolls advanced toward the tire building drum by two substantially parallel link chains each of which comprises bearing means into which the said groups of rolls are easily exchangeably inserted, each of said groups including a layer roll and a roll for winding up the intermediate web which prior to the winding off of a layer section from said layer roll separates successive windings of said layer roll from each other.

3,679,521

DRIVEN MANDREL ROTATABLE ABOUT ITS LONGITUDINAL AXIS

Peder Ulrik Poulsen, Graested, Denmark
(Lonholt Ladegaard, 3480 Fredensborg, Denmark)

Filed Feb. 27, 1970, Ser. No. 15,097
Claims priority, application Denmark, Feb. 28, 1969, 1,133/69
The portion of the term of the patent subsequent to Sept. 2, 1986, has been disclaimed
Int. Cl. B65h *81/08*
U.S. Cl. 156—429 4 Claims



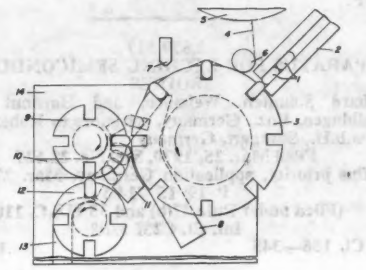
A driven mandrel for production of tubing in continuous lengths comprises a tubular core section extending beyond bearing supports for the care section and on which is mounted a mandrel wall on the outer surface of which the tubing is formed. The outer wall is constituted by an endless strip wound continuously and helically towards the free end of the core section with adjacent convolutions in edge to edge relationship. The strip is supported on rows of rolls rotatably supported and secured against longitudinal movement in radial frames extending from the core section.

3,679,522

WRAPPING MACHINE

Paul Anderegg, Horgen, and Rolf G. Granger, Oberrieden, Switzerland, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 22, 1970, Ser. No. 48,352
Claims priority, application Switzerland, June 25, 1969, 9,711/69
Int. Cl. B32b *1/08*
U.S. Cl. 156—477 6 Claims



A machine for wrapping flat-oval bodies with an adhesive tape. The bodies to be wrapped are supplied to a first slotted wheel and adhesive tape is brought into contact with said body and said first wheel, said tape being subsequently cut into strips of desired length by a heated wire. The body is then transferred, by means of a lifting segment, to a second slotted wheel, this operation covering three sides of said bodies with adhesive tape. A second lifting mechanism coupled to said second wheel transfers said body to a third slotted wheel, this latter transfer completing the wrapping of said body. A third lifting segment attached to said third wheel subsequently removes the body from its slot on said third wheel.

3,679,523

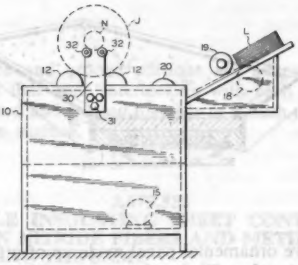
NECK SUPPORTING BRACKET FOR JUG LABELING MACHINE

Donald V. Knight, Thomasville, Ala., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,118
Int. Cl. B65c *3/12*
U.S. Cl. 156—447 2 Claims

A neck supporting bracket for a machine for applying a label to a jug having a neck with a handle thereon while the jug is rotated while on its side around a horizontal axis. The machine has a pair of parallel horizontal rollers, driving means coupled to the rollers for driving the rollers, label feed means for feeding labels one at a time to the space between the rollers, and glue applying means between the label feed means and the rollers for intermittently applying glue to labels fed thereby. A starting switch is provided adjacent the rollers having an actuating arm which is engaged and actuated when a jug is placed on its side on the rollers. The starting switch is

connected to the driving means for starting the driving means when the starting switch actuating arm is engaged. A label feed switch is provided which has an actuating arm extending upwardly to a position in the path of the jug handle as the jug is rotated. A label position timer is connected between the label feed switch and the label feed means for controlling the feed of labels when the label feed switch is actuated, and a glue timer is connected between the label feed switch and the glue applying means for controlling the application of glue to the fed labels. The neck supporting bracket is vertically mounted on the machine adjacent the position of the neck of the jug when the jug is in position on the rollers, and has bearing means on the upper end lying along the periphery of the neck of the jug when the jug is in position on the rollers.



3,679,524

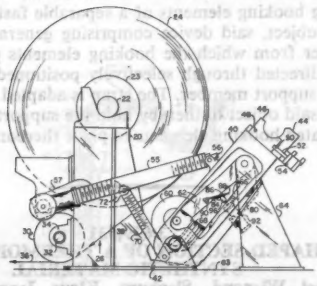
SPLICING WEBS

Kirk W. Bassett, Paxton, Mass., and Frank P. Ford, Liverpool, N.Y., assignors to Rice Barton Corporation, Worcester, Mass.

Filed July 18, 1969, Ser. No. 842,894

Int. Cl. B65h *19/18, 69/06*

U.S. Cl. 156—502 **9 Claims**



Splicer for large rolls of sheet material providing generally horizontal sheet run, with stationary primary stands, secondary arms pivoted upstream of the primary stands for movement of the secondary roll axis through an arc above the secondary arm pivots, and a splicing member mounted between the primary and secondary roll axes, so that the sheet run just upstream of the lead-out roll is more nearly horizontal after transfer than before.

3,679,525

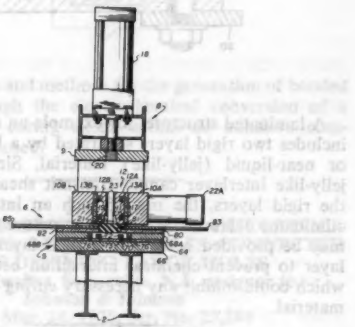
APPARATUS FOR MOLDING FORMS ON VARIOUS SUBSTRATES

Anton M. Andersen, 1 Highland Ave., Demarest, N.J. 07627

Filed Feb. 3, 1970, Ser. No. 8,263

Int. Cl. B32b *31/04, 31/20*

U.S. Cl. 156—515 **6 Claims**



Apparatus for molding forms on substrates so that the forms and substrates are a homogeneous unit and whereby the forms originate as shaped parts in the raw, semi-cured or fully cured state or as loads of form material in the raw state.

3,679,526

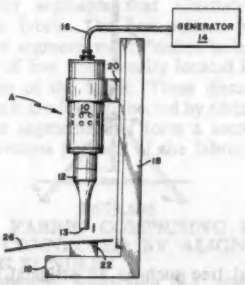
SONIC OR ULTRASONIC CUTTING APPARATUS

Robert C. Horton, Rochester, N.Y., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Filed Apr. 8, 1970, Ser. No. 26,489

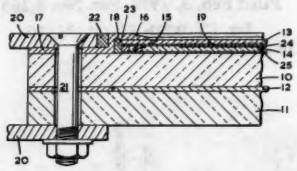
Int. Cl. B29c *27/08;* **B32b** *31/20*

U.S. Cl. 156—580 **11 Claims**



A cutting apparatus operating in the sonic or ultrasonic frequency range comprises an oscillating tool impacting on an anvil in order to cut or slit sheet material interposed. A portion of a movable strip interposed in the gap between the tool and anvil acts as a knife edge, the strip being advanced to provide a new cutting edge.

3,679,527
LAMINATED STRUCTURES
Roger Dudley Salway Crick, Luton, England, assignor to The English Electric Company Limited, London, England
Filed Aug. 21, 1969, Ser. No. 851,928
Claims priority, application Great Britain, Aug. 23, 1968, 40,354/68
Int. Cl. B32b *1/04;* B44f *1/00*
U.S. Cl. 161—5 7 Claims

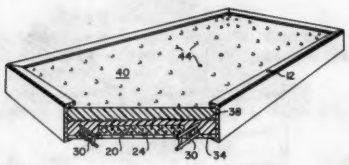


A laminated structure, for example an aircraft window, includes two rigid layers separated by a layer of a liquid or near-liquid (jelly-like) material. Since a liquid or jelly-like interlayer cannot transmit shear loads between the rigid layers, the use of such an interlayer material eliminates delamination of the structure. A barrier layer may be provided between the rigid layers and the interlayer to prevent chemical interaction between the layers which could inhibit any necessary curing of the interlayer material.

3,679,528
INDOOR-OUTDOOR ARTIFICIAL CHRISTMAS TREE
Si Spiegel, Briarcliff Manor, N.Y., assignor to American Technical Industries, Inc., Mount Vernon, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,672
Int. Cl. A47g *33/06, 33/12*
U.S. Cl. 161—24 2 Claims

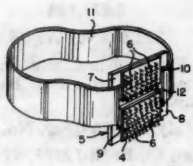
An artificial tree such as an artificial Christmas tree which can be mounted indoors during the holiday season and thereafter removed and mounted in an outdoor setting. For indoor mounting the wire trunk of the tree is fitted into an apertured block which is in turn inserted into an indoor stand. For outdoor mounting, the tree is removed from the block and fitted into the open end of a stake which is pointed at its other end for insertion into the ground.

3,679,529
PANEL CONSTRUCTION
Richard C. Prusinski, Dearborn, and Marcello Fermani, Attilio Torcolacci, and Luigi Fermani, Detroit, Mich., assignors to Architectural Research Corporation, Detroit, Mich.
Original application Jan. 24, 1966, Ser. No. 522,527. Divided and this application Aug. 12, 1969, Ser. No. 871,209
Int. Cl. B24d *3/02;* B32b *1/04*
U.S. Cl. 161—44 4 Claims



A massive ornamental panel made up of a frame, rigid foamed material, a filled resinous material and a foraminous sheet.

3,679,530
ATTACHMENT DEVICE FOR HOOK AND LOOP FASTENERS
Joseph Perina, Huntington, N.Y., assignor to American Velcro, Inc., Manchester, N.H.
Filed June 8, 1970, Ser. No. 44,531
Int. Cl. B32f *7/08;* A44f *21/00*
U.S. Cl. 161—48 2 Claims



An attachment device is disclosed for removably attaching hooking elements of a separable fastener member to an object, said device comprising generally a support member from which the hooking elements project and a strap directed through selectively positioned spaced slots in the support member. The strap is adapted to be secured about said object to thereby hold the support member and associated hooking elements in place thereon.

3,679,531
SHAPED SECTION OF A THERMOPLASTIC SYNTHETIC MATERIAL
Michael Wienand, Siegburg, Klaus Jensen, Buisdorf, Franz Primessing, Mondorf, and Franz-Werner Alfter, Oberlar, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed Apr. 7, 1969, Ser. No. 813,834
Claims priority, application Germany, Apr. 5, 1968, P 17 78 201.3; Aug. 5, 1968, P 17 75 379.6
Int. Cl. A44b *21/00*
U.S. Cl. 161—48 16 Claims

The present disclosure is directed to a shaped section of a thermoplastic synthetic material containing at least one

tongue portion and at least one groove portion for mutual joining or for further joining said section with similarly shaped sections containing identical tongue and groove portions wherein the cross-sectional configurations of

said tongue and groove portions are adapted to each other such that upon interlocking with each other, they are deformed and pressed together in a flush union along their entire surface.

3,679,532

FLEXIBLE INSULATING SHEET CONTAINING BORON NITRIDE FIBERS AND METHOD FOR FORMING THE SAME

William S. Neff, Lima, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

No Drawing. Filed Dec. 8, 1969, Ser. No. 883,280
Int. Cl. B32b *5/12*
U.S. Cl. 161—59 **12 Claims**

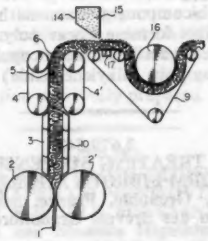
A strong, flexible sheet insulation is prepared by filing boron nitride fibers combined with submicroscopic fibrous crystals of boehmite alumina. Boron nitride fibers, having a diameter from about 10 to 30 microns and a length of about 1 to 4 inches, are laid out in layers and the boehmite alumina is distributed throughout the layers. The combination is fired in air at a temperature in the range of about 750 to 1000° F.

3,679,533

LOOP PILE FABRIC AND METHODS FOR MANUFACTURING SAME

Masao Fukuda, Hachiro Goto, Susumu Norota, and Yukimasa Fujisawa, Ibaraki, Japan, assignors to Teijin Limited, Kita-ku, Osaka, Japan

Filed Oct. 13, 1970, Ser. No. 80,314
Claims priority, application Japan, Oct. 13, 1969, 44/81,714
Int. Cl. D04h *11/00*
U.S. Cl. 161—66 **11 Claims**



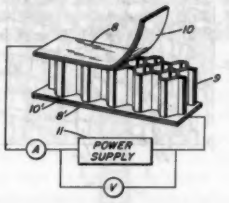
A loop pile fabric produced without the use of looms or tufting machines, the fabric being composed of thermoplastic synthetic fibers and prepared by melting and cutting a sheeting having repeated foldings into two separate zones; the backing layer and the face covering layer and fusing them again to manufacture loop pile fabric having an appealing appearance and good hand.

3,679,534

ELECTROCHEMICAL FORMATION OF BONDED STRUCTURES

Norman Louis Weinberg, Williamsville, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 9, 1971, Ser. No. 113,923
Int. Cl. B32b *3/12, 15/04, 31/04*
U.S. Cl. 161—68 **10 Claims**



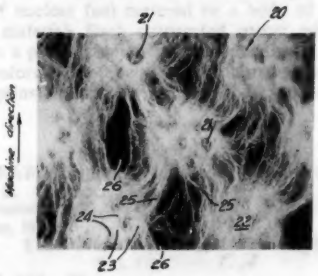
Compositions and methods for the generation of bonded structures through the electrochemical conversion of a precursor to a curing agent within an adhesive composition are disclosed.

3,679,535

NONWOVEN FABRIC COMPRISING DISCONTINUOUS GROUPS OF SMALL HOLES CONNECTED BY RIBBONS DEFINING LARGE HOLES

Frank Kalwaites, Somerville, N.J., assignor to Johnson & Johnson

Filed Mar. 24, 1970, Ser. No. 22,290
Int. Cl. D04h *1/46, 1/70*
U.S. Cl. 161—109 **7 Claims**



A nonwoven fabric having a plurality of patterns of groups of fiber segments that alternate and extend throughout the fabric. The first pattern is of yarn-like bundles of fiber segments which define holes or apertures or other areas of low fiber density located in first discontinuous portions of the fabric. These discontinuous portions of the fabric are interconnected by ribbon-like groups of aligned fiber segments that form a second pattern in second discontinuous portions of the fabric.

3,679,536

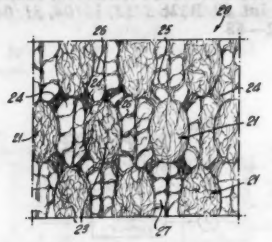
NONWOVEN FABRIC COMPRISING BUDS PLUS BUNDLES CONNECTED BY ALIGNED FIBERS INCLUDING BUNDLES

Frank Kalwaites, Somerville, N.J., assignor to Johnson & Johnson

Filed Mar. 24, 1970, Ser. No. 22,291
Int. Cl. D04h *1/46, 1/70*
U.S. Cl. 161—109 **14 Claims**

A nonwoven fabric having a plurality of patterns of groups of fiber segments that alternate and extend throughout the fabric. One of the patterns is disposed in first discontinuous portions of the fabric each of which portions

comprises at least one yarn-like bundle of fiber segments and a mat of interentangled helter-skelter fiber segments. These first discontinuous portions of the fabric are interconnected by groups of substantially aligned fiber segments lying in second portions of the fabric which form a second pattern. The groups of substantially aligned fiber segments in this second pattern may be flat, ribbon-like groups or yarn-like bundles of fiber segments.

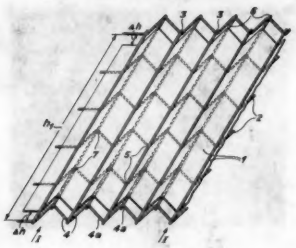


3,679,537

PACKING ELEMENTS FOR MATERIALS-INTERCHANGE COLUMN

Max Huber and Werner Meier, Winterthur, Switzerland, assignors to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Aug. 7, 1968, Ser. No. 750,938
Claims priority, application Switzerland, Aug. 16, 1967, 11,527/67; June 24, 1968, 9,362/68
Int. Cl. B01d *25/04, 35/00, 39/08;* B32b *3/28*
U.S. Cl. 161—135 7 Claims



The packing elements are formed of lamella or strips which are constructed of reinforced non-self-supporting woven structure. The reinforcement is provided by wires which are disposed on opposite sides of the woven structure and spot welded together. Where the woven structure is corrugated, the transverse wires are disposed in the troughs of the corrugations. Intermediate layers of flat woven structure can be used between corrugated layers in forming the packing elements.

3,679,538

NOVEL OPEN-CELLED MICROPOROUS FILM

Melvin L. Druin, West Orange, John T. Loft, Springfield, and Steven G. Plovan, Livingston, N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 876,511, Nov. 13, 1969. This application Oct. 28, 1970, Ser. No. 84,712
Int. Cl. B32b *3/00;* B29c *17/02*
U.S. Cl. 161—159 17 Claims

Open-celled microporous polymer films characterized by having a reduced bulk density as compared to the bulk density of the corresponding polymer films having no open-celled structure, a crystallinity of above about 30 percent, a pore size of less than 5000 angstroms and a nitrogen flux of greater than 35.4, are prepared by the consecutive steps of cold stretching, hot stretching and heat setting a non-porous, crystalline, elastic film.

3,679,539

LIGHTWEIGHT BUILDING UNITS

Hubert Gossens, Moers, Jürgen Kammermeier, Krefeld-Uerdingen, and Werner Klöker, Krefeld-Bockum, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 25, 1970, Ser. No. 92,865
Claims priority, application Germany, Dec. 13, 1969, P 19 62 603.0
Int. Cl. B32b *5/14, 5/20;* B29d *27/00*
U.S. Cl. 161—159 6 Claims

Lightweight building units, especially lightweight slabs of synthetic resin rigid foam having a granular surface with exposed aggregates which is synthetic resin-bonded and resembles washed concrete.

The lightweight building units may be optionally fibre-reinforced and/or contain lightweight fillers.

3,679,540

REINFORCED MICROPOROUS FILM

Daniel Zimmerman, Brunswick, and Stanley Wolfowitz, Union, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Nov. 27, 1970, Ser. No. 93,514
Int. Cl. B32b *7/00*
U.S. Cl. 161—159 6 Claims

Microporous films exhibit many properties which are beneficial in specialized end uses, however, because of the microporous characteristics, the film inherently suffers from poor strength. By reinforcing the microporous films with a macroporous substrate the strength problems have been overcome while maintaining the desirable permeability and accordingly, the reinforced films may now be used in sterile packaging and as hospital bed sheets, pillow liners and the like.

3,679,541

SHEATH/CORE BICOMPONENT FILAMENTS AND PROCESS OF PREPARING SAME

Anthony Charles Davis, Pontypool, and Ian Stuart Fisher, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 20, 1970, Ser. No. 56,667
Claims priority, application Great Britain, July 28, 1969, 37,789/69
Int. Cl. D01d *5/28*
U.S. Cl. 161—175 8 Claims

Sheath/core bicomponent filaments having a core derived from a fibre-forming linear polyamide or copolyamide and a sheath derived from a copolyester or copolyamide containing poly (alkylene oxide) radicals.

3,679,542

METHOD OF TREATING SUSPENSION OF FIBERS TO FORM FIBROUS AGGREGATES

Guy Jacquelin, Grenoble, France, assignor to Société d'Exploitation des Brevets Granofibre (Sebreg), Paris, France

Continuation-in-part of application Ser. No. 557,036, June 13, 1966, which is a continuation-in-part of application Ser. No. 427,040, Jan. 21, 1965. This application Apr. 1, 1970, Ser. No. 24,764
The portion of the term of the patent subsequent to Apr. 14, 1987, has been disclaimed
Int. Cl. D21d *5/28*
U.S. Cl. 162—1 1 Claim

A suspension of fibers is treated to form aggregates by subjecting a suspension of the fibers in a liquid to rota-

tional agitation to establish a speed gradient between points in the suspension causing the formation of eddys, which result in the fibers moving together into groups. The

grouped fibers cling to one another to form aggregates, the concentration by weight of the fibers in the suspension at the beginning of the treatment being relatively low.

3,679,543

CONTROLLING THE COOKING PROCESS IN PULP DIGESTION BY DIFFERENTIAL CONDUCTIVITY MEASUREMENTS

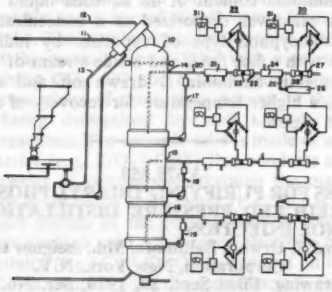
Hubert M. Rivers, Upper St. Clair Township, Allegheny County, Pa., assignor to Calgon Corporation

Continuation-in-part of application Ser. No. 717,564, Apr. 1, 1968. This application Aug. 18, 1970, Ser. No. 64,676

The portion of the term of the patent subsequent to Jan. 5, 1988, has been disclaimed

Int. Cl. D21c 7/12

U.S. Cl. 162—49 **8 Claims**



A method is provided for automatically controlling the cooking process in a pulp digester by determining the differential conductivity of the liquor in said digester at spaced stages in the cooking process and adjusting one of the control variables temperature, time of processing and liquor strength including the hydroxide concentration in the bath from a curve of conductivity differences versus concentration previously prepared.

3,679,544

PROCESS FOR THE PRODUCTION OF WATER-RESISTANT PAPER OR NONWOVENS CONTAINING WATER SOLUBLE POLYVINYL ALCOHOL

Tadao Ashikaga and Shosuke Higashimori, Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Sakazu, Kurashiki, Okayama Prefecture, Japan

Filed Aug. 11, 1969, Ser. No. 848,862

Claims priority, application Japan, Aug. 13, 1968, 43/57,547; Sept. 10, 1968, 43/65,095

Int. Cl. D21h 3/44, 5/12

U.S. Cl. 162—157 R **7 Claims**

A process for the production of paper or nonwovens comprising impregnating at 40° C. or below paper or nonwovens containing a water-soluble polyvinyl alcohol which dissolves in water at 95° C. or below with an aqueous mineral acid solution of α-titanic acid which has a titanium concentration of at least 0.2% by weight and which is prepared at 40° C. or below, then rinsing and drying.

3,679,545

NUCLEAR FUEL ROD

Raymond M. Leirvik, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed June 2, 1969, Ser. No. 829,629

Int. Cl. G21c 3/18

U.S. Cl. 176—68 **7 Claims**

A nuclear reactor core element utilizing one or more corrugated tubular spacer members that resiliently support and locate within a sealed cladding tube either a body of nuclear fuel material or a body of neutron absorber material. Each corrugated spacer member is located in a plenum zone wthin the cladding tube and radially reinforces the tube wall section around such plenum zone against collapse by external fluid pressure.

3,679,546

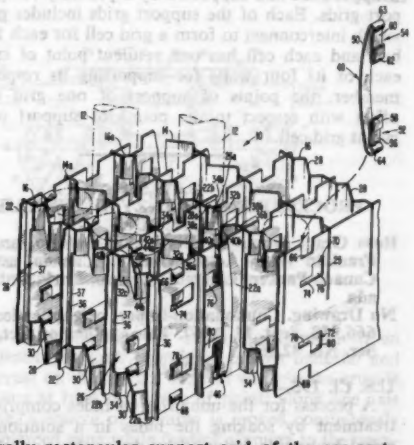
NUCLEAR REACTOR FUEL ROD SUPPORT GRID

Frank E. Muellner, Potomac, and Lewis P. Sarkozi, Adamstown, Md., assignors to NUS Corporation, Washington, D.C.

Filed Oct. 22, 1968, Ser. No. 769,587

Int. Cl. G21c 3/34

U.S. Cl. 176—78 **5 Claims**



A generally rectangular support grid of the egg-crate type for laterally supporting intermediate their ends the

fuel rods in a nuclear reactor fuel assembly. Substantially perpendicular wall members form a plurality of openings through which nuclear reactor fuel rods are adapted to extend when mounted in a nuclear reactor fuel assembly. Two opposite walls of each opening have inwardly projecting portions which form substantially rigid support surfaces for a rod. A removable spring is mounted on a third wall of each opening for providing a resilient support surface for the rod. Therefore, three surfaces support the rod against lateral movement while providing for axial movement thereof, and the rod is supported at only three areas around any given peripheral section of the rod. The spring is shaped to cooperate with slots mounted in the third wall so that the spring may be easily installed and removed after the wall members have been permanently assembled to form the grid. Therefore, springs made of different material from that of the grid members may be used. In addition, different size springs may be mounted on the third wall of an opening to accommodate warping of the support grid and variations in the diameters of the rods. The third wall also contains means for reliably locking the spring in place during reactor operation.

3,679,547

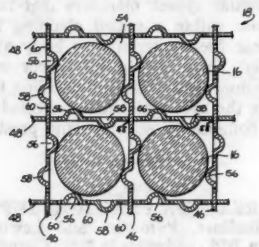
ELASTIC SUPPORT GRID FOR NUCLEAR FUEL ELEMENTS

Henrik S. Warberg, Dearborn, Mich., assignor to Atomic Power Development Associates, Inc., Detroit, Mich.

Continuation-in-part of application Ser. No. 728,951, May 14, 1968. This application Dec. 16, 1968, Ser. No. 871,462

Int. Cl. G21c *3/34*

U.S. Cl. 176—78 **8 Claims**



A nuclear reactor fuel element assembly which includes a plurality of elongated fuel members contained in a wrapper tube and supported by a plurality of spaced support grids. Each of the support grids includes grid straps which interconnect to form a grid cell for each fuel member, and each cell has one resilient point of support on each of its four walls for supporting its respective fuel member, the points of support of one grid cell being offset with respect to the points of support of the adjacent grid cell.

3,679,548

PROCESS FOR THE ENZYMIC UNHAIRING OF HIDES

Ross Grant Donovan, Etobicoke, Ontario, and Stewart Franklin Wolf, Acton, Ontario, Canada, assignors to Canada Packers Limited, Toronto, York, Ontario, Canada

No Drawing. Continuation-in-part of application Ser. No. 666,958, Sept. 11, 1967. This application Oct. 19, 1970, Ser. No. 82,154

Int. Cl. C12b *1/00*

U.S. Cl. 195—6 **8 Claims**

A process for the unhairing of hides comprising a pretreatment by soaking the hides in a solution of alkali metal hydroxide followed by the application of a proteolytic enzyme material containing chymotryptic activity, as determined by assay on acetyl tyrosine ethyl ester, in an amount sufficient to provide from about 0.0005% to 0.05% chymotryptic activity based on the weight of the hides.

3,679,549

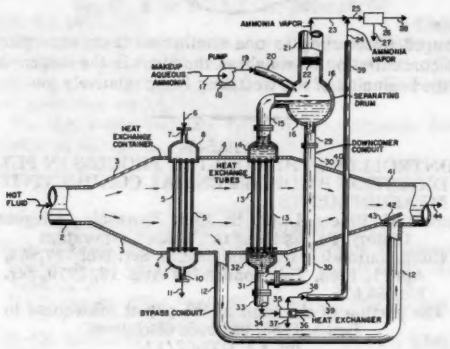
SEPARATION OF AMMONIA IN A THERMOSYPHON EVAPORATOR

Daniel J. Newman, Jackson Heights, and Louis A. Klein, Flushing, N.Y., assignors to Chemical Construction Corporation, New York, N.Y.

Filed Dec. 15, 1969, Ser. No. 885,145

Int. Cl. B01d *3/04*

U.S. Cl. 203—12 **9 Claims**



The ammonia content of an aqueous liquid ammonia stream is selectively vaporized as a concentrated vapor in a thermosyphon type of vaporizer by indirect heat exchange with a hot fluid, and a side stream of the circulating aqueous ammonia is drawn off and separately heated to a higher temperature for recovery of additional ammonia vapor.

3,679,550

PROCESS FOR PURIFYING TRIARYL PHOSPHATES BY REDUCED PRESSURE DISTILLATION AND PHENOL INJECTION

Edward F. Orwoll, Baltimore, Md., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,267

Int. Cl. B01d *3/34*

U.S. Cl. 203—38 **4 Claims**

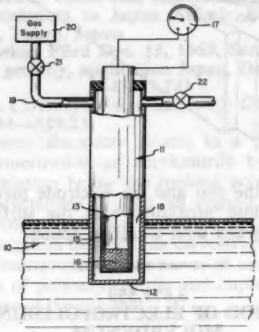
Reaction mixtures, resulting from the phosphorylation of a mixture containing phenol; ortho-, meta- and para-alkylphenol; 2,6-, 2,4-, 2,5- and 3,5-dialkylphenols, 2,4,6- and 2,3,5-trialkylphenols with phosphorus oxychloride, containing tris (alkylphenyl) phosphate esters, unreacted alkylphenols and generally a catalyst residue are purified to remove the unreacted alkylphenols by (1) distilling the reaction mixture at an elevated temperature and reduced pressure to remove most of the unreacted alkylated phenols (generally hindered alkylated phenols), (2) sparging phenol into the remaining reaction mixture for one-half to several hours at elevated temperatures and reduced pressure to remove remaining hindered phenols not only by a simple entraining mechanism but also, apparently, by transalkylation and transesterification reactions, leaving essentially only unhindered phenols in the product phosphate ester, (3) distilling the sparged reaction mixture to separate the phosphate ester and unhindered phenols from the reaction residue which also generally contains a catalyst residue, and (4) further purifying the product by conventional means such as caustic washing and/or activated carbon treatment to reduce the color of the tris(alkylphenyl) phosphate esters.

3,679,551

METHOD AND APPARATUS FOR DETERMINING THE CARBON ACTIVITY OF FLUIDS

Morris Kolodney, River Edge, N.J., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 30, 1968, Ser. No. 771,953
Int. Cl. G01n 27/46
U.S. Cl. 204—1 T 17 Claims



The carbon activity of a fluid of unknown carbon content is determined by measuring the E.M.F. of a dependent electrochemical relationship. The carbon-containing fluid is brought into contact with a tubular probe made of a fluid-impervious material (e.g., Fe or Ni) in which carbon from the fluid dissolves and diffuses. A ceramic tube is disposed within and is spaced slightly away from the outer tubular probe. The annular space between the outer tubular probe and the ceramic tube is filled with a gaseous medium containing CO_2, CO and a small amount of O_2, the relative proportions of these gases present in the gaseous medium being determined by well known, reversible chemical reactions. The ceramic tube is made of a metallic oxide material (e.g., ZrO_2+CaO) that conducts electricity by the transfer of oxygen ions through the material. A thin porous layer of an inert metal (e.g., Pt) is disposed on the outer surface of the ceramic tube in contact with the gaseous medium, and a reference electrode of known oxygen activity (e.g., Cu+Cu_2O) is disposed on the inside of the tube in contact with the inner surface thereof. A potentiometer in electrical contact with the layer of inert metal and with the reference electrode measures the potential difference (E.M.F.) between the gaseous medium and the reference electrode, and this E.M.F. provides a direct measure of the carbon activity of the carbon-containing fluid.

3,679,552

CELLULAR STRUCTURES

Roy Jervis, Sutton Coldfield, England, assignor to Dunlop Holdings Limited, London, England

Continuation-in part of application Ser. No. 847,428, Aug. 4, 1969. This application June 29, 1970, Ser. No. 50,383
Claims priority, application Great Britain, June 21, 1969, 31,473/69
Int. Cl. C23b 5/50, 5/52
U.S. Cl. 204—37 R 17 Claims

A method of producing a cellular structure which comprises electroplating a metal on a conductive porous substrate to produce a layer of metal on said substrate and subsequently alloying the metal by contacting it with at least one alloying component or a precursor thereof at an elevated temperature in order to introduce said alloying component and thus produce a porous alloy structure. The product alloy structures are useful in applications where metal cellular structures are required to have particular properties, for example high physical strength or good heat resistance.

3,679,553

MIRROR BRIGHT SILVER PLATING

Lawrence Greenspan, New York, N.Y., assignor to Engelhard Minerals & Chemicals Corporation

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,118
Int. Cl. C23b 5/44, 5/46
U.S. Cl. 204—43 5 Claims

A silver cyanide plating bath for electroplating a mirror bright silver deposit is improved by the addition of highly sulfated castor oil containing at least about 10% combined SO_3.

3,679,554

METHOD FOR ELECTROLYTIC TREATMENT OF STEEL SURFACE IN A CHROMATE SOLUTION

Hidehisa Yamagishi, Yokohama-shi, Hiroshi Takano, Tokyo, and Masao Takeuchi, Zushi-shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1970, Ser. No. 99
Claims priority, application Japan, Jan. 13, 1969, 44/2,066
Int. Cl. C23b 11/00
U.S. Cl. 204—56 3 Claims

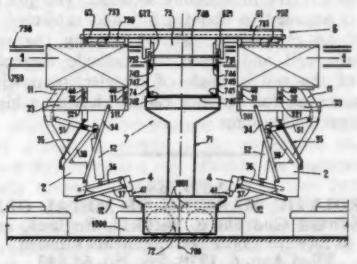
With respect to the prior art method which comprises immersing a steel plate as a cathode in an electrolyte in which there are dissolved a main agent of chromic acid or chromates and a promotive agent of inorganic sulfur compounds, and subjecting the surface of said article to electrolytic treatment so as to improve the paint adhesion and corrosion resistance of said surface, it has been found that addition of fluorine compounds to said electrolyte as a second promoter will elevate the paint adhesion to the treated surface.

3,679,555

PROCESS AND APPARATUS FOR SUPPLYING ALUMINA

Daniel Duclaux, Lille, Jean-Pierre Givry, Ville-d'Avray, and Jacky Pointud, Marseille, France, assignors to Compagnie Pechiney et Electrification and Charpente, Levage, fractional part interest to each

Filed Apr. 16, 1970, Ser. No. 29,034
Claims priority, application France, Apr. 16, 1969, 6911759
Int. Cl. C22d 3/02, 3/12
U.S. Cl. 204—67 14 Claims



Process and apparatus for supplying alumina to an igneous electrolysis tank containing molten material and having a crust on the surface thereon wherein the crust is pierced along at least one series of points along one axis of the tank, a source of alumina is moved continuously along the pierced zone while feeding alumina to the openings formed in the crust, piercing the crust along at least

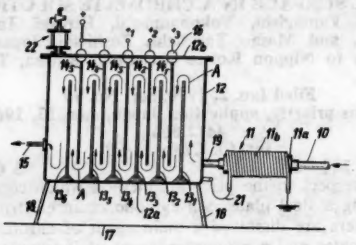
one series along another axis of the tank and continuously moving a source of alumina along the second pierced zone while continuously feeding alumina to the openings formed in the crust.

3,679,556

DEVICE FOR TREATING DISPERSE SYSTEMS

Heinz Doevenspeck, Minden, Germany, assignor to Dr. Richard Eifer Wirtschaftsprufungsgesellschaft und Steuerberatungsgesellschaft mit beschrankter Haftung, Dortmund, Germany

Original application Sept. 25, 1968, Ser. No. 762,492, now Patent No. 3,625,843. Divided and this application Jan. 6, 1971, Ser. No. 104,261
Claims priority, application Germany, Sept. 26, 1967, P 16 67 029.4
Int. Cl. B01k *3/00*
U.S. Cl. 204—269 8 Claims



The invention provides a method of and a device for treating disperse systems, preferably liquids, particularly beer, which device comprises at least one cascade container having an inlet and an outlet for the systems to be treated, a plurality of cascade barriers in the form of positive and negative carbon electrodes, and an induction coil connected to said cascade container on the upstream side of said inlet, said induction coil and said negative carbon electrodes being grounded in series.

3,679,557

HEXAVALENT CHROMIUM REDUCTION

Patricia G. Gilby, Wilmington, Del., and William R. Heineman, Euclid, Ohio, assignors to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed July 20, 1970, Ser. No. 56,649
Int. Cl. B01k *3/08*; C01g *37/00*; C02b *1/82*
U.S. Cl. 204—97 6 Claims

Disclosed is an electrochemical process of reducing Cr(VI) to Cr(III) in aqueous solution. The pH of the solution is adjusted to about 1.5–3 and subjected to the action of an electrolytic cell by passing the solution through the cell and hence the cathode thereof. The cathode of the cell is made of an electrolytically conductive material, for instance carbon, having a high surface area per unit volume.

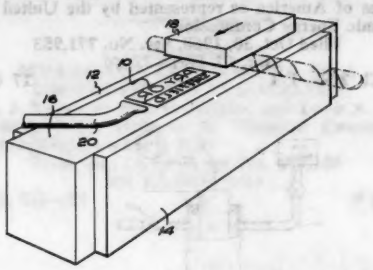
3,679,558

ELECTROLYTIC MARKING OF METAL OBJECTS

Albert Edward Godbehere, Sheffield, England, assignor to Edward Pryor Developments Limited

Filed Aug. 6, 1970, Ser. No. 61,640
Int. Cl. B23p *1/00*
U.S. Cl. 204—143 R 14 Claims

A method of and apparatus for electrolytically marking metal objects of circular shape by flooding the surface to be marked with a deluge of electrolyte and bringing an electrode member into close proximity with said surface, the electrode member bearing in relief the markings with which it is required to mark said surface, the electrode and the object to be marked being connected into an electric circuit suitable to cause an electrolytic action to



occur between the two and the electrode member being brought into close proximity with the surface of the object to be marked with a rolling action.

3,679,559

METHOD OF ELECTROPOLISHING MOLYBDENUM

George R. Blair, Culver City, and Sherman R. Keller, Valinda, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

No Drawing. Continuation-in-part of application Ser. No. 721,153, Apr. 15, 1968. This application June 22, 1970, Ser. No. 48,551
Int. Cl. C23b *1/04, 3/06*
U.S. Cl. 204—140.5 4 Claims

A method of electropolishing work pieces as molybdenum electrodes and grids and removal of oxidation on stainless steel, with a current density on the order of 0.9 to 5 amperes per sq. inch in a voltage range in the order of 15 to 90 volts, using an anhydrous acetic acid based bath containing about 10 percent sulfuric acid. The process is relatively free of various hazards common to the electropolishing of metals, e.g. high cell voltage, excessive metal loss and dangerous electrolyte compositions.

3,679,560

PROCESS FOR THE PREPARATION OF AN ANHYDRIDE OR TRIVALENT PHOSPHORUS USING EXCITED HELIUM

Eugene J. Mezey, Upper Arlington, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Sept. 25, 1969, Ser. No. 861,145
Int. Cl. C01b *25/12*
U.S. Cl. 204—157.1 S 15 Claims

A process for preparing an anhydride of trivalent phosphorus from an anhydride of pentavalent phosphorus using electronically-excited helium is disclosed. The anhydride of trivalent phosphorus is useful as an intermediate in the preparation of detergency builders for use in detergent compositions.

3,679,561

TREATMENT OF ETHYLENE UNSATURATED ACID ESTER COPOLYMER WITH ALKALINE MEDIUM

Francis R. Galiano and Wayne E. Smith, Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed June 22, 1970, Ser. No. 48,511
Int. Cl. C08f *27/00*
U.S. Cl. 204—159.15 15 Claims

Without changing the physical form of the ethylene copolymer, the pendant ester groups of an ethylene copolymer are converted to the salt form by introducing an article of manufacture having a surface comprising a crosslinked ethylene polymer containing pendant ester

groups into an aqueous medium maintained at an elevated temperature, said aqueous medium containing an inorganic alkali or alkaline earth metal salt.

3,679,562

LOWER TEMPERATURE SOLID PHASE POLYMERIZATION OF ACRYLONITRILE IN THE PRESENCE OF AN ORGANIC CARBONYL COMPOUND

Yoneho Tabata, Chiba-ken, and Chihiro Oizumi, Tokyo, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,284
Claims priority, application Japan, Dec. 23, 1968, 43/93,741
Int. Cl. B01j *1/00*; C08d *1/00*; C08f *1/16*
U.S. Cl. 204—159.23 6 Claims

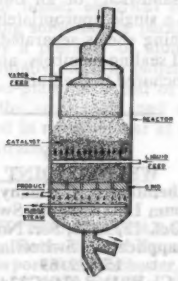
The present disclosure relates to a process of solid phase polymerization of acrylonitrile by means of an ionizing radiation below the melting point of an acrylonitrile, characterized in that an organic carbonyl compound or compounds are added to acrylonitrile before the polymerization thereof. The carbonyl compound added to the polymerization system serves to control the molecular weight of polyacrylonitrile and improve other physical properties of the polymer.

3,679,563

HOUDRIFLOW CRACKING PROCESS

André W. Pollock, West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Aug. 7, 1970, Ser. No. 61,987
Int. Cl. C10g *11/14*
U.S. Cl. 208—166 3 Claims



In an airlift catalytic cracking system using a highly active zeolite catalyst where the hydrocarbon is contacted by falling catalyst which forms a bed on a supporting grid, the improvement of feeding hydrocarbon vapors to the cracking zone and feeding a liquid portion of the hydrocarbon to a lower portion of said catalyst bed whereby coking on the catalyst in the cracking zone is reduced, and deactivation of the catalyst in the cracking zone is ameliorated and conversion and yields of gasoline are increased.

3,679,564

PROCESS FOR ELECTRODEPOSITING ACRYLIC COMPOSITIONS

Rostyslaw Dowbenko and Wen-Hsuan Chang, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed June 19, 1970, Ser. No. 47,860
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—181 6 Claims

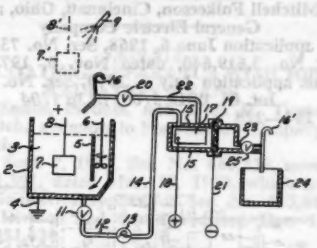
It has been found that aqueous coating compositions comprising acid-solubilized, imine-modified, carboxylic acid group-containing acrylic resins can be electrodeposited. These compositions deposit on the cathode to provide coatings having excellent properties.

3,679,565

PROCESS FOR ELECTROLYTIC TREATMENT OF LIQUORS USING PRESSURE CELL WITH POROUS ELECTRODE MEANS

Allan E. Gilchrist, Westlake, Ohio, assignor to SCM Corporation, Cleveland, Ohio

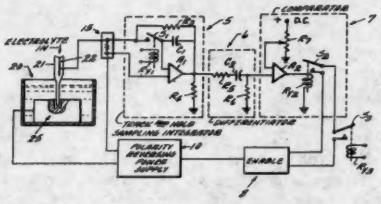
Continuation-in-part of applications Ser. No. 76,311, Sept. 28, 1970, Ser. No. 91,905, Nov. 23, 1970, and Ser. No. 94,267, Dec. 2, 1970. This application July 27, 1971, Ser. No. 166,436
Int. Cl. B01k *5/00, 5/02*; C23b *13/00*
U.S. Cl. 204—180 R 15 Claims



Shown is an improved pressure cell process and apparatus for treating feed liquor bearing dissolved electrolyte and providing, from a bath thereof with a pair of D.C. electrodes immersed therein at a minimum deposition voltage V_1 across said electrodes, a fluent electrodeposit on one of said electrodes, which electrodeposit has electrical conductivity lower than that of the bath, e.g., resin, oil, slime, or gel. The apparatus is for sustained operation at a voltage above V_1, and it comprises opposed electrodes disposed apart in a casing for forming an electrical cell zone therebetween, at least one of such electrodes being a deposition electrode for attraction of said fluent electrodeposit, at least one of such electrodes being a relatively grossly microporous product discharge electrode that forms a boundary area for said zone, the thickness of such product discharge electrode providing substantial electrical field constriction of its passageways to substances of like charge, an inlet to said zone for continuous supply of feed liquor thereto, an outlet from said zone for continuous withdrawal of treated feed liquor therefrom, a permeate collection chamber for each such support discharge electrode, each such chamber being equipped with adjustable throttling outlet means for controlling back pressure therein, and means for continuously removing resulting fluent electrodeposit from collection on the deposition electrode at a rate effective for maintaining substantially unattenuated electric current flow between said electrodes at an operating voltage above V_1, said means for removing comprising a deposition electrode adapted for through-the-pore flushing away of or surface flushing away of said fluent electrodeposit. Feed liquor is passed into the cell zone; operating voltage across the opposed electrodes is maintained above V_1; fluent electrodeposit tending to collect at the deposition electrode is removed therefrom at a rate effective for maintaining substantially unattenuated electric current flow between opposed electrodes at the elevated voltage by: (a) flushing it away from the deposition electrode surface into the cell zone while liquid enriched in dissolved electrolyte is forced out of the cell zone through a product discharge electrode; (b) flushing it through a product discharge electrode as a cell liquor-bearing permeate; or (c) flushing it through a product discharge electrode as in (b) while liquid enriched in dissolved electrolyte is forced out as in (a); and permeate that flows through the microporous product discharge electrode or electrodes is collected, the differential pressure across such product discharge electrode or electrodes being regulated for obtaining permeate enriched

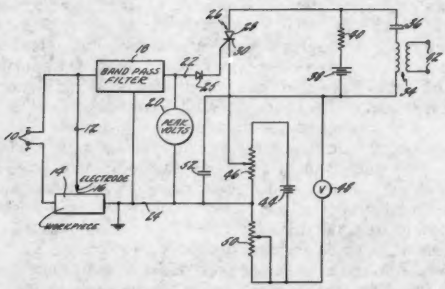
in the liquor components attracted to a particular product discharge electrode. Suitable feed liquors include aqueous electrocoating paints and waste waters therefrom, pigmented dispersions, and generally aqueous streams and wastes containing fats, oils, sliming and gel-forming materials, e.g., sewage, food processing, paper making, industrial plant, petroleum refinery, and mine wastes.

3,679,566
APPARATUS WITH STEM OVERCURRENT PROTECTION
Emmet Mitchell Fulkerson, Cincinnati, Ohio, assignor to General Electric Company
Original application June 6, 1968, Ser. No. 734,971, now Patent No. 3,619,640, dated Nov. 9, 1971. Divided and this application July 6, 1970, Ser. No. 60,995
Int. Cl. B01k *3/00*; B23p *1/04*
U.S. Cl. 204—228 **2 Claims**



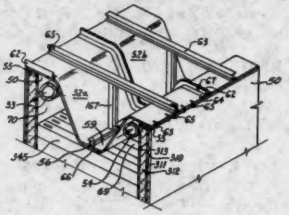
A sensing circuit for use in an electrochemical machining apparatus for prevention of damage to said apparatus caused by a short circuit during the machining process wherein said sensing circuit includes a tracking and a comparison circuit.

3,679,567
ELECTROCHEMICAL SPARK DETECTION SYSTEM
Norman D. Ballard, East Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 19, 1971, Ser. No. 125,968
Int. Cl. B01k *3/00*; B23p *1/02*
U.S. Cl. 204—228 **3 Claims**



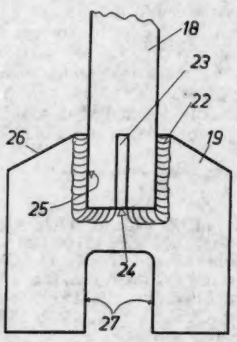
A spark detection system for an electrochemical machining apparatus has an adjustable threshold for electrical disturbances typically caused by sparking in the gap between the electrode and the workpiece. The threshold level is directly readable in volts.

3,679,568
CELL CONSTRUCTION
Gothe O. Westerlund, Vancouver, British Columbia, Canada, assignor to Chemech Engineering Ltd., Vancouver, British Columbia, Canada
Filed Sept. 17, 1968, Ser. No. 760,209
Claims priority, application Canada, Oct. 13, 1967, 002,445
Int. Cl. B01k *3/00*; E01c *2/04*
U.S. Cl. 204—242 **84 Claims**



An improved electrolytic cell of enhanced durability and ease of construction is provided which includes a novel cover member, with or without novel cell wall structure and/or novel internal structure of the electrolytic cell tank. The cover is characterized by three members which sealingly engage with the upper surface of the electrolytic cell tank to provide an inlet manifold and a separate and distinct outlet manifold, with the inner exposed surfaces of the cover being resistant to the chemicals within the electrolytic cell tank. The cell wall construction is characterized by a "sandwich" of an outer shell, an inner lining, formed of a single appropriately sized lining sheet or an array of lining sheets separated by, but joined by means of specified sealing members, and a mortar bonded to the shell and anchored to the lining.

3,679,569
WELDED JOINT
Kurt Springer, Rheinfelden, Germany, assignor to Swiss Aluminum Ltd., Chippis, Switzerland
Filed Oct. 15, 1970, Ser. No. 81,056
Claims priority, application Switzerland, Oct. 24, 1969, 15,879/69
Int. Cl. B01k *3/04*; C22d *3/12*
U.S. Cl. 204—286 **2 Claims**



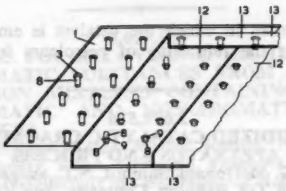
Disclosed is a support or suspension for an anode in an aluminum electrolytic cell, including a steel mounting plate and a contact rod of aluminum or copper welded at

one end portion thereof to an end portion of the plate so that the axis of the rod is in the plane of the plate. The end portion of the rod is provided with a diametral slot directed transversely to the plane of the plate and the weld is interrupted by the slot.

3,679,570
BASEPLATE ASSEMBLY FOR MERCURY-CATHODE CELL

John Howliston King and Frank Smith, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed July 7, 1970, Ser. No. 52,859
Claims priority, application Great Britain, July 22, 1969, 36,832/69
Int. Cl. B01k *3/04*; C22d *1/04*; C23b *5/70*
U.S. Cl. 204—297 R **6 Claims**

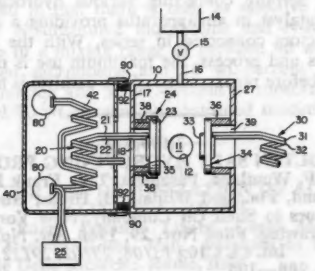


A baseplate assembly for an electrolytic cell having a flowing mercury cathode comprising a steel plate the upper surface of which in operation is wetted by and carries the flowing mercury cathode and a current extractor plate and made of a metal of higher electrical conductivity than steel, said plates being substantially parallel to each other and spaced apart by a plurality of aluminum studs distributed in a substantially uniform pattern over the common area of the two plates, one end of each stud being friction-welded to the steel plate and each stud being electrically-connected in rigid manner at or near its other end to the current extractor plate.

3,679,571
R-F SPUTTERING APPARATUS

Frieder H. Ensslin, Rochester, N.Y., assignor to The Bendix Corporation, Rochester, N.Y.

Filed Oct. 12, 1970, Ser. No. 80,068
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **23 Claims**

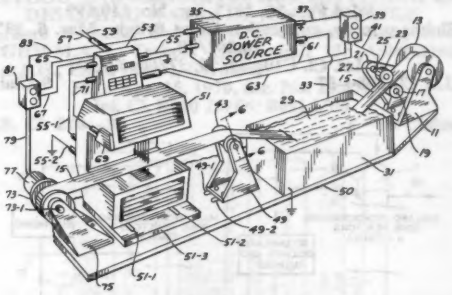


The radio frequency generator of a sputtering system is inductively coupled to a sputter target to achieve radio frequency power transfer and impedance matching between generator and target. The radio frequency generator assembly containing the primary winding of a radio frequency coupling transformer is adjustably positioned over the secondary winding of this transformer, which is disposed in juxtaposition to the vacuum enclosure and to the sputter target contained therein, to achieve sputtering. The inductive coupling allows impedance matching through varied degrees of coupling between the primary and the secondary coils, thus eliminating need for a radio frequency transmission line and associated impedance matching devices between frequency generator and the sputter target. This reduces the total volume required for the radio frequency components; it simplifies the operation; and eliminates the danger of radio frequency radiating from a mismatched cable connection.

3,679,572
ELECTROCOATING APPARATUS WITH IONIZING RADIATION MEANS

Arthur G. Smith, Livonia, and Allen H. Turner, Ann Arbor, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Application Sept. 7, 1967, Ser. No. 666,338, now Patent No. 3,501,391, dated Mar. 17, 1970, which is a continuation-in-part of application Ser. No. 583,885, Oct. 3, 1966. Divided and this application Dec. 1, 1969, Ser. No. 881,020
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—300 **4 Claims**



A coating bath comprising paint binder resin is dispersed as anionic electrolyte in aqueous medium and characterized by being anodically depositable therefrom as a paint film that is crosslinkable by ionizing radiation having average energy in the range of 100,000 to 450,000 electron volts. In one embodiment, the major fraction of the paint binder resin is a homopolymerizable, alpha-beta olefinically unsaturated resin having per molecule at least one carboxyl group ionizable in the aqueous medium of the bath. In another embodiment, the major fraction of the paint binder is an alpha-beta olefinically unsaturated resin having per molecule at least one carboxyl group ionizable in the aqueous medium of the bath and a crosslinkable amount of vinyl monomers. Apparatus for use in electrodepositing and curing this coating material is also disclosed.

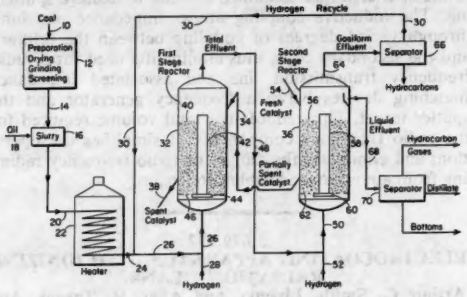
3,679,573
TWO STAGE COUNTER-CURRENT HYDROGENATION OF COAL

Clarence A. Johnson, Princeton, N.J., assignor to Hydrocarbon Research, Inc., New York, N.Y.

Filed Mar. 8, 1971, Ser. No. 121,815
Int. Cl. C10g *1/08*
U.S. Cl. 208—10 **5 Claims**

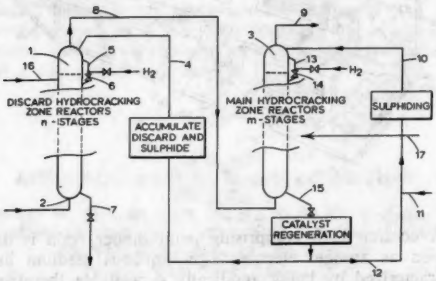
In the ebullated bed catalytic hydrogenation of coal into hydrocarbonaceous products either greater coal throughput per pound of catalyst can be achieved or,

alternatively, less catalyst per ton of coal can be employed by conducting the hydrogenation of the coal



in first and second stage ebullated bed reaction zones and by using the partially spent catalyst from the second stage as the catalyst in the first stage.

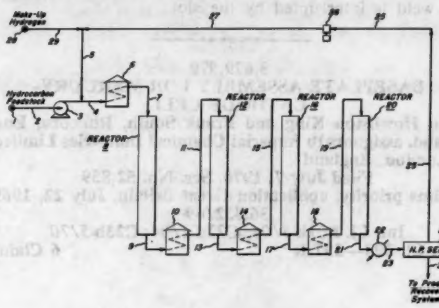
3,679,574
HYDROGENATION PROCESS
Robert L. Irvine, Rob Nes, Pyle Hill, Woking, Surrey, England
Filed Feb. 25, 1971, Ser. No. 118,699
Claims priority, application Great Britain, Mar. 5, 1970, 10,587/70
Int. Cl. C10g *23/00, 37/00, 37/10*
U.S. Cl. 208—57 **9 Claims**



The invention relates to the preparation of lube oil and wax from low vanadium content crude or residua feed. The feed is first treated in a catalyst discard zone hydrocracker using catalyst provided by regeneration of low activity catalyst from a subsequent main hydrocracking zone. The discard hydrocracker comprising a plurality of beds containing fluidised catalyst descending in countercurrent to ascending feed and hydrogen. Catalyst transfer between beds is external of the reactor.

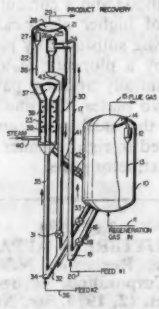
3,679,575
REFORMING WITH A PLATINUM MORDENITE-ALUMINA CATALYST
Ralph J. Bertolacini, Chesterton, Ind., assignor to Standard Oil Company, Chicago, Ill.
Filed Nov. 3, 1969, Ser. No. 873,305
Int. Cl. C10g *35/08*
U.S. Cl. 208—65 **20 Claims**

The catalyst comprises a Group VIII noble metal, mordenite having a silica-to-alumina ratio of at least 19:1, and an adsorbent refractory inorganic oxide. The preferred Group VIII noble metal is platinum; the preferred refractory inorganic oxide is a catalytically active alumina. The mordenite has a silica-to-alumina ratio of less than 45:1.



The processes in which the catalyst is employed are processes for the reforming of petroleum hydrocarbon feedstocks.

3,679,576
FLUIDIZED CATALYTIC CRACKING APPARATUS AND PROCESS
Gerald W. G. McDonald, Summit, N.J., assignor to Commonwealth Oil Refining Company, Inc., New York, N.Y.
Filed Jan. 6, 1970, Ser. No. 964
Int. Cl. B01j *9/20;* **C10g** *11/18, 37/02*
U.S. Cl. 208—74 **11 Claims**



A process and apparatus for the catalytic cracking of hydrocarbons under fluid catalytic cracking conditions wherein the maximum efficiency is obtained from a catalyst by serially contacting various hydrocarbon feeds with a catalyst in an apparatus providing a plurality of riser reactors connected in series. With the use of this apparatus and process, the maximum use is made of the catalyst before regeneration of the catalyst is necessary.

3,679,577
MOLTEN SALT HYDROFINING PROCESS
Charles F. Wantland, Pasadena, Tex., Frank E. Juge, Jr., Maitland, Fla., and William H. Hinds, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Nov. 29, 1968, Ser. No. 780,256
Int. Cl. C10g *13/08, 23/02, 29/12*
U.S. Cl. 208—108 **5 Claims**

A process for conversion of heavy hydrocarbon fractions containing hetero-atom impurities comprising contacting the fractions in the presence of hydrogen, at elevated temperature and pressure with a molten salt comprising cadmium halides, an alkali metal halide and optionally one or more additional salts as diluents or co-catalysts.

3,679,578

REFORMING A PARAFFINIC FRACTION WITH A PLATINUM-RHENIUM CATALYST

Milton H. Dalson, 1 Ogden Road, Mendham, N.J. 07945; James P. Gallagher, 325 Indiana, Park Forest, Ill. 60466; Carl D. Keith, 100 Crest Drive Countryside, Summit, N.J. 07901; and William C. Pfefferle, 51 Woodland Drive, Middletown, N.J. 07748

No Drawing. Filed June 12, 1970, Ser. No. 45,895
Int. Cl. C10g *35/08*
U.S. Cl. 208—138 2 Claims

Paraffinic fractions of 6 to 8 carbon atoms made from naphtha reformate are reformed in contact with a catalyst containing platinum and rhenium supported on a porous, solid base, for instance, alumina.

ERRATUM

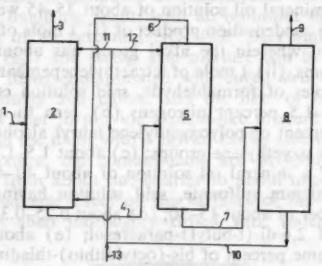
For Class 208—166 see:
Patent No. 3,679,563

3,679,579

PROCESS FOR RECOVERING HIGHLY PURE AROMATIC SUBSTANCES FROM HYDROCARBON MIXTURES CONTAINING BOTH AROMATIC AND NON-AROMATIC SUBSTANCES

Gerhard Preusser, Essen, Martin Schulze, Neviges, and Klaus Richter, Essen, Germany, assignors to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Mar. 22, 1971, Ser. No. 126,650
Claims priority, application Germany, Mar. 20, 1970, P 20 13 298.3
Int. Cl. C10g *21/20*
U.S. Cl. 208—323 12 Claims



Process for recovering highly pure aromatic substances from hydrocarbon mixtures which contain in addition to the aromatic substances varying amounts of non-aromatic substances by liquid-liquid extraction advantageously in combination with an after arranged extractive distillation characterized in that there is used as selective solvent a mixture of N-substituted morpholine and N-substituted succinimide in a mixing range of between 90 wt.-percent N-substituted morpholine and 10 wt.-percent N-substituted succinimide and 30 wt.-percent N-substituted morpholine and 70 wt.-percent N-substituted succinimide.

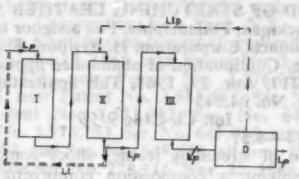
3,679,580

PROCESS FOR THE DE-IONIZATION OF AQUEOUS SALINE SOLUTIONS

Gianfranco Boari, Lorenzo Liberti, Carlo Merli, and Roberto Passino, Rome, Italy, assignors to Consiglio Nazionale Delle Ricarche, Rome, Italy

Filed July 13, 1970, Ser. No. 54,256
Claims priority, application Italy, July 12, 1969, 38,643/69
Int. Cl. B01d *15/04*
U.S. Cl. 210—26 3 Claims

A process for the de-ionization of aqueous saline solutions by means of ion exchange treatment is disclosed, the process being characterized by the fact that the process is carried out by using a cation exchanger, an anion exchanger and a cation exchanger arranged in series, and wherein the first cation exchanger is constituted of essentially weak cation exchange resins and the anion exchanger is constituted of weak anion exchange resins, the process comprising the steps of: passing the aqueous solution to be de-ionized through the first cation exchanger, then through the anion exchanger and at last



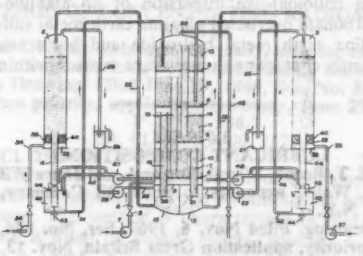
through the second cation exchanger; recycling a part of the solution effluent from the anion exchanger upstream of the first cation exchanger and controlling the recycle in order to obtain a methyl orange alkalinity in the solution feeding the first cation exchanger, and if necessary, decarbonating the solution effluent from the last cation exchanger and recycling the recovered CO_2 upstream of the anion exchanger.

3,679,581

METHOD AND APPARATUS FOR SOFTENING OR DESALTING WATER BY ION EXCHANGE

Gerhard K. Kunz, Guystavsburg, Germany, assignor to GHH-M.A.N. Technik Gesellschaft für Anlagenbau m.b.H., Essen (Ruhr), Germany

Filed Apr. 15, 1970, Ser. No. 28,672
Int. Cl. B01d *15/06*; B01j *1/06*
U.S. Cl. 210—33 8 Claims



In an ion exchange apparatus and method for the softening and/or desalting of water by countercurrent flow, an ion exchange column, containing alternately cation exchange material and anion exchange material, is provided with a pair of regenerating columns being connected to said exchange column, with one receiving spent cation material and the other spent anion material, and a washing column connected to each regeneration column and to the exchange column so that upon the regeneration and washing of the cation and anion exchange materials, each will be passed to their respective zone.

3,679,582

FLOW IMPROVEMENT OF WAXY HYDROCARBON WITH THE AID OF POLYSACCHARIDE DERIVATIVES

Adriaan H. Wagenaar and Pieter H. van der Meij, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Oct. 8, 1969, Ser. No. 864,900
Int. Cl. C09k *3/00*
U.S. Cl. 252—8.3 12 Claims

A method of transporting waxy liquid hydrocarbons through conduits without causing waxy deposition or

plugging of the conduits and improving the flow characteristics of the hydrocarbon by addition to said hydrocarbons a small amount of a polysaccharide derivative having saturated aliphatic hydrocarbon chains of at least 15 carbon atoms in the molecule.

3,679,583

METHOD OF STRETCHING LEATHER SHOES

Elias W. Packman, Philadelphia, Pa., assignor to Arcadia Products Corporation, Hollywood, Fla.

No Drawing. Continuation of abandoned application Ser. No. 725,217, Apr. 29, 1968. This application Dec. 2, 1970, Ser. No. 94,545

Int. Cl. C14c *9/90*

U.S. Cl. 252—8.57 1 Claim

A method of stretching leather shoes comprising the steps of applying a composition comprising isopropyl alcohol, octylphenoxy polyethylene oxide and hexachlorophene to the shoe and walking with the shoe on the foot in order to stretch the leather. The hexachlorophene is an anti-bacterial agent, and its function is to kill odor-producing bacteria in shoes.

3,679,584

OVERBASED ALKALINE EARTH METAL SULFONATE LUBE OIL COMPOSITION MANUFACTURE

Walter W. Hellmuth, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed June 1, 1970, Ser. No. 42,514

Int. Cl. C10m *1/54, 1/10*

U.S. Cl. 252—33.4 3 Claims

A process for increasing the alkaline earth metal ratio of an alkaline earth metal carbonate overbased alkaline earth metal sulfonate lubricating oil composition comprising introducing into a lubricating oil medium containing a colloidal-like dispersion of an alkaline earth metal carbonate overbased alkaline earth metal sulfonate, an alkaline earth metal hydroxide and boric acid and subsequently contacting the resultant mixture with carbon dioxide.

3,679,585

LUBRICANT COMPOSITIONS

James H. T. Brook, Wirral, England, and Joyce Williams, Mold, Wales, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Nov. 6, 1969, Ser. No. 874,370

Claims priority, application Great Britain, Nov. 13, 1968, 53,870/68

Int. Cl. C10m *1/20, 1/22, 1/32*

U.S. Cl. 252—51.5 A 9 Claims

A lubricant comprising (1) a lubricating oil (2) an oil soluble succinimide dispersant and (3) an oil soluble alcohol or ester has increased dispersancy properties.

3,679,586

LIQUID ELECTROPHOTOGRAPHIC DEVELOPERS CONTAINING A DYE MODIFIED POLYPEPTIDE

Satoru Honio and Yasuo Tamai, Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

No Drawing. Filed Aug. 18, 1970, Ser. No. 64,826

Claims priority, application Japan, Aug. 18, 1969, 44/64,732

Int. Cl. G03g *9/04*

U.S. Cl. 252—62.1 6 Claims

An electrophotographic liquid developer comprising a highly insulating non-polar carrier liquid and a toner dispersed therein, characterized by that said toner comprises a polypeptide compound which is chemically united with a reactive dye containing both of an electron affinitive functional group capable of reacting with NH_2, or OH group in a hydrophilic polypeptide compound and of a chromogenic group exhibiting an optical absorption in the visible region of the spectrum and the method for making the developer.

3,679,587

FUNCTIONAL FLUID COMPOSITIONS CONTAINING PERFLUORO SURFACTANTS

Terrill D. Smith, Edmond, Okla., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Mar. 10, 1970, Ser. No. 18,291

Int. Cl. C09k *3/00*

U.S. Cl. 252—75 20 Claims

Phosphate ester based functional fluid compositions containing small amounts of perfluorinated anionic surfactants are novel compositions of matter which when employed as hydraulic fluids in hydraulic systems show increased ability to inhibit erosion of material and damage to members in such hydraulic systems.

3,679,588

HYDRAULIC FLUIDS

Luke A. Schaap, South Holland, and Marvin J. Den Herder, Olympia Fields, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation of application Ser. No. 682,651, Nov. 13, 1967. This application Oct. 29, 1970, Ser. No. 85,263

Int. Cl. C09k *3/00*

U.S. Cl. 252—75 4 Claims

Petroleum based hydraulic fluids, when contaminated with sea water form tight sea water-in-oil emulsions and protect hydraulic systems, consist of petroleum lubricating oil having a viscosity of about 60–920 SSU at 100° F. and contain in combination (a) about 4–8 volume percent of a mineral oil solution of about 35–45 weight percent of the condensation product of (i) 1 mole of a monoalkylphenol wherein the alkyl group has about 90–120 carbon atoms, (ii) 1 mole of tetraethylenepentaamine, and (iii) 2 moles of formaldehyde, said solution containing about 1.0–1.5 percent nitrogen; (b) zero to about 0.5 volume percent of polyoxyethylene lauryl alcohol having about four oxyethylene groups; (c) about 1.5–1.7 volume percent of a mineral oil solution of about 40–45 weight percent calcium sulfonate, said solution having a total base number of about 15–30; (d) about 0.25–0.35 volume percent of 2,6-di-(t-butyl)-paracresol; (e) about 0.035–0.045 volume percent of bis-(octyldithio)-thiadiazole; (f) zero to about 0.7 volume percent of paraffin wax-naphthalene condensation product; (g) about 0.1–0.4 volume percent of a methylnaphthalene solution of about 4.8 weight percent of N,N'-dimethyldithiooxamide; and (h) about 3–5 parts per million of silicone oil foam depressant having a viscosity of about 1000 cs. at 25° C., such fluids have a viscosity of about 12–220 cs. at 100° F.

3,679,589

LOW-FOAMING RINSING, WASHING AND CLEANING COMPOSITIONS

Harald Schnegelberger, Hilden, Rhineland, and Theodor Altenschöpfer, Dusseldorf-Wersten, Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

No Drawing. Filed June 27, 1969, Ser. No. 837,369

Claims priority, application Germany, Aug. 17, 1968, P 17 92 308.9

Int. Cl. B01d *19/04;* C11d *3/28, 7/32*

U.S. Cl. 252—102 8 Claims

Low-foaming rinsing, washing and cleaning compositions comprising (a) a content of at least one compound having a cleaning action selected from the group consisting of (1) anionic surface-active compounds, amphoteric surface-active compounds, non-ionic surface-active compounds and mixtures thereof, (2) organic builder salts and inorganic builder salts, and (3) mixtures of (1)

and (2), and (b) a content of at least one alkoxylated melamine having a molecular weight of from 700 to 20,000 selected from the group consisting of propoxylated melamines, butoxylated melamines and propoxylated-butoxylated melamines, where the weight ratio of components (a) to components (b) is from 999:1 to 3:1.

3,679,590
SOLVENT BLEACHING
Charles L. Cormany, Wadsworth, and John A. Spotts, Jr., Akron, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed Sept. 11, 1969, Ser. No. 857,214
Int. Cl. C11d 7/54
U.S. Cl. 252—104 11 Claims

Fabrics with both oleophilic and hydrophilic characteristics are cleansed with compositions of organic cleansing solvent throughout which an aqueous bleaching phase is dispersed. Bleaching agent remaining in the fabric is removed by a rinse solution containing the combination of an alcohol or like water soluble component and the cleansing solvent.

3,679,591
METHOD AND COMPOSITION FOR STRIPPING STRUCTURAL ADHESIVES AND THE LIKE
Gilberto Carrillo, Riverside, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
No Drawing. Filed Dec. 1, 1969, Ser. No. 881,328
Int. Cl. C11d 7/08
U.S. Cl. 252—142 9 Claims

A mixture is composed of concentrated nitric acid and a strong oxidizing agent, with an optimum mixture formulation of 86 percent HNO_3 (42° Bé.) and 7 percent each of H_2O and CrO_3. The mixture can be used as a bath for items contaminated with cured structural adhesives, primers and paints, and the like, or have added thereto a filler to provide a paint-like mixture selectively applied to the items with a brush. In the case of the optimum mixture, the contaminants are stripped from the items in from about one-quarter to about one-half hour, with no adverse effect on the surfaces of the items. The items are then thoroughly rinsed with water or other solvent.

3,679,592
CLEANSING AND SOIL PREVENTIVE COMPOSITION
Noel L. Schomburg, Florissant, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Aug. 17, 1970, Ser. No. 64,635
Int. Cl. C11d 3/065, 3/30, 3/44
U.S. Cl. 252—153 4 Claims

Compositions comprising a film forming component, a surfactant, a scale inhibitor, an organic solvent, and water are effective for cleansing hard surfaces and inhibiting deposition of soils or stains thereon.

3,679,593
STRIPPING OF CONDENSATION POLYMERS WITH AN ALKOXIDE
Charles N. Hansen, Salt Lake City, Morris D. Young, Ephraim, and James E. Granger, Provo, Utah, assignors to Wasatch Chemical Company, Salt Lake City, Utah
No Drawing. Filed Jan. 24, 1969, Ser. No. 793,874
Int. Cl. C09d 9/00
U.S. Cl. 252—170 6 Claims

Methods and compositions for stripping or removing condensation polymers from a substrate, whereby the amide or ester linkages of said polymer are cleaved by a transesterification reaction using an alcoholic solution of an alkali metal catalyst.

3,679,594
CHEMILUMINESCENT SMOKES
Urho A. Lehikoinen, Detroit, Mich., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Continuation-in-part of applications Ser. No. 561,337, June 29, 1966, now Patent No. 3,496,111, Ser. No. 649,820, now Patent No. 3,576,752, Ser. No. 649,821, now Patent No. 3,551,341, Ser. No. 649,835, now Patent No. 3,551,342, Ser. No. 649,836, now Patent No. 3,576,753, Ser. No. 649,838, now Patent No. 3,576,754, and Ser. No. 649,850, all June 29, 1967, and application Ser. No. 778,316, Nov. 22, 1968, now Patent No. 3,551,343, which is a continuation-in-part of application Ser. No. 561,418, June 29, 1966. This application Dec. 18, 1969, Ser. No. 886,349
The portion of the term of the patent subsequent to Feb. 17, 1987, has been disclaimed
Int. Cl. C06d 1/10; C09k 3/00
U.S. Cl. 252—188.3 25 Claims

A method of illuminating an area using a chemiluminescent smoke composition containing an aluminum alkyl complexed with an amine or an ether and then mixed with a chemiluminescent agent. For example, triethylaluminum complexed with a hexamethylene tetramine or diethylether and mixed with a chemiluminescent agent, such as tetrakis dimethylamino ethylene, when contacted with water produces a chemiluminescent smoke of sufficent intensity to light an area.

3,679,595
METHOD OF CONCENTRATING RADIOACTIVE WASTE
Walter Döllgast, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
No Drawing. Filed June 19, 1969, Ser. No. 834,866
Claims priority, application Germany, June 29, 1968, P 17 64 586.2
Int. Cl. C09k 3/00, 3/22
U.S. Cl. 252—301.1 W 3 Claims

A method of concentrating aqueous solutions and suspensions of radioactive waste by thickening and drying processes. The method is characterized in that the concentrate is dried on heated rollers, whereby a polyelectrolyte is added, in a known manner, for the purpose of adjusting an appropriate viscosity. Bone glue is added, in order to prevent formation of dust and as an embedding mass. The rolled product is subsequently compressed into solid bodies.

3,679,596
NUCLEAR REACTOR FUEL COMPOSITION
Howard W. Hill, Fremont, Alexis I. Kaznoff, Castro Valley, and Mickey O. Marlowe, Livermore, Calif., assignors to General Electric Company
No Drawing. Filed Aug. 30, 1968, Ser. No. 756,383
Int. Cl. C09k 3/00
U.S. Cl. 252—301.1 R 6 Claims

The viscosity or creep resistance of oxide-type reactor fuels may be minimized by the addition of low viscosity materials which segregate to the fuel grain boundaries during reactor heat-up and operation. This minimizes the stress applied to the cladding due to mechanical interaction of the fuel and the clad during the reactor operation. Suitable materials include glass formers which may form glasses with the nuclear fuel material. The low viscosity material segregates to the fuel material grain boundaries resulting in a marked increase in the creep rate resulting from less restrained grain boundary sliding.

3,679,597

CALCIUM CONTAINING SILICATE OXYAPATITE LASER MATERIALS

Richard H. Hopkins and George W. Roland, Monroeville, Kenneth B. Steinbruegge, Murrysville, and William D. Partlow, Blackridge, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 22, 1969, Ser. No. 859,673
Int. Cl. C09k 1/54
U.S. Cl. 252—301.4 F 10 Claims

A composition of matter which can be used as a laser crystal and which can be doped with sensitizer ions has the empirical chemical formula $CaM_{4-x}(SiO_4)_3O:A_x$ where A represents a lasing ion selected from Nd, Er, and Ho, x has a value from .001 to 1 and M represents an ion selected from La, Gd and mixtures thereof.

3,679,598

INSPECTION PENETRANT PROCESS AND COMPOSITIONS EMPLOYING MIXTURES OF FLUORESCENT INDICATOR DYE AND NON-FLUORESCENT ULTRAVIOLET ABSORBER DYE

James R. Alburger, 7356 Santa Monica Blvd., La Canada, Calif. 90046

No Drawing. Continuation-in-part of application Ser. No. 731,225, May 22, 1968. This application Sept. 14, 1970, Ser. No. 72,138
Int. Cl. G01n 21/16; G09k 1/02
U.S. Cl. 252—301.2 R 2 Claims

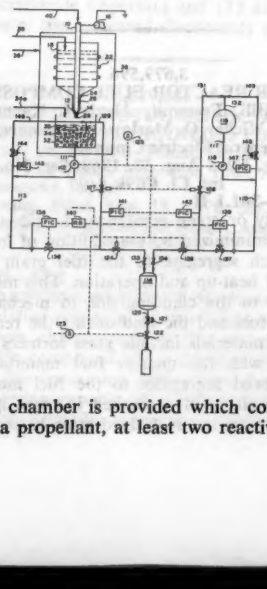
An inspection penetrant process and inspection penetrant compositions which utilize mixtures of fluorescent indicator dyes and ultraviolet absorber dyes dissolved in liquid penetrant carrier materials. The penetrant composition disclosed may be used in the detection of surface defects in test objects in the presence of a background of shallow porosity indications. The novel combination of an ultraviolet absorber dye with a fluorescent indicator dye provides a relatively sharp transition of fluorescence response, with the result that the brightness response of porosity indications is selectively diminished without any substantial loss in the brightness of underlying crack indications, whereby the seeability contrast and detectability of actual crack indications is substantially improved.

3,679,599

PRESSURIZED CHAMBER CONTAINING SELF-CURING INGREDIENTS

Clifton R. Goldsmith, Borger, Tex., assignor to Phillips Petroleum Company

Filed Aug. 3, 1970, Ser. No. 60,533
Int. Cl. C09k 3/30
U.S. Cl. 252—305 6 Claims



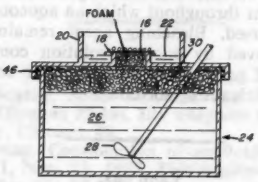
A valved chamber is provided which contains therein, along with a propellant, at least two reactive ingredients, one being held in capsules out of reactive contact with the other; said capsules bursting substantially immediately upon release of the ingredients from the chamber to thus establish reactive contact of the reactive ingredients.

3,679,600

CONTAINER WITH MEANS FOR DEFOAMING FOAMING LIQUIDS

Paul Timothy Hahm, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 23, 1970, Ser. No. 92,040
Int. Cl. B01d 19/00; C12b 1/00, 1/18
U.S. Cl. 252—361 4 Claims



An improved container for liquids which, upon mixing, agitation, aeration etc., tend to foam and means for adding an antifoaming agent to such a liquid in a controlled fashion are disclosed. The improved container comprises a vessel having a liquid level, means above said liquid level communicating the interior of said vessel to at least one horizontally disposed orifice opening to a recessed antifoaming agent reservoir. A novel antifoaming agent supply lid embodying the foregoing structure is also described.

3,679,601

DEHYDROGENATION CATALYSTS

George J. Nolan and Vernon C. F. Holm, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Original application Jan. 8, 1968, Ser. No. 696,146, now Patent No. 3,580,969. Divided and this application Dec. 4, 1970, Ser. No. 95,321
Int. Cl. B01j 11/82
U.S. Cl. 252—437 6 Claims

Improvements in hydrocarbon dehydrogenation are realized by the use of a catalyst comprising tin and/or a tin compound supported on an aluminum phosphate.

3,679,602

HYDROCARBON ISOMERIZATION PROCESS

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 723,886, Apr. 24, 1968. This application Feb. 25, 1969, Ser. No. 802,207
Int. Cl. B01j 11/78
U.S. Cl. 252—442 6 Claims

Isomerizable hydrocarbons including paraffins, cycloparaffins, olefins and alkylaromatics are isomerized by contacting the hydrocarbon at isomerization conditions with a catalytic composite of alumina having combined therewith a platinum group metallic component, a halogen component and a rhenium component.

3,679,603

CATALYST FOR OXIDATION OF OLEFINS

Artur Maximovich Garnish, ulitsa Chernyshevskogo, 25-a, kv. 4, and Lev Moiseevich Shafransky, ulitsa Ostrovskogo, 11, kv. 2, both of Novokuibyshevsk, Kuibyshevskoi oblasti, U.S.S.R., and Galina Antonova Ischerikova, ulitsa Iskra, 1a, kv. 63, Gorky, U.S.S.R.

No Drawing. Filed Jan. 15, 1970, Ser. No. 3,198

Int. Cl. B01j *11/82*

U.S. Cl. 252—432 2 Claims

A catalyst for oxidation of olefins, based on bismuth, molybdenum and oxygen, as well as silicon, or silicon and an alkali metal, or silicon and boron, or silicon, an alkali metal and boron, the empirical formula of the catalyst being

$$Bi_aSi_bMo_cM_dB_eO_f$$

where

M is an alkali metal;
a=5–20
b=0.02–1
c=12
d=0–2.3
e=0–0.1
f=43–72

The catalyst may also comprise a carrier with the specific surface of 0.3–3 $m.^2/g.$ in an amount of 20–90% of the total weight of the catalyst.

3,679,604

ULTRA-STABLE 3-ANGSTROM MOLECULAR SIEVE

Hanju Lee and Dongsuk Chi, Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,217

Int. Cl. B01j *11/40*; C01b *33/28*

U.S. Cl. 252—455 Z 16 Claims

Ultra-stable 3 A. zeolite A molecular sieves can be produced from 4 A. zeolite A molecular sieves by the concurrent or sequential exchange of the 4 A. zeolite using potassium and rare earth ions. The resulting 3 A. zeolite A has a high steam and thermal stability, is very useful as an adsorbent, and can be reactivated using extreme environments for a subsequent reuse.

3,679,605

EXTRUDED ALUMINA CATALYST SUPPORT AND THE PREPARATION THEREOF

Robert A. Sanford, Prospect, Ky., and John Mooi, Homewood, and Edward S. Rogers, Hinsdale, Ill., assignors to Sinclair Research, Inc., New York, N.Y.

No Drawing. Continuation of application Ser. No. 725,218, Apr. 29, 1968. This application July 17, 1970, Ser. No. 56,000

Int. Cl. B01j *11/06*

U.S. Cl. 252—463 16 Claims

A method of preparing extruded, gel-type alumina catalyst supports is disclosed. The method involves mixing crystalline alumina hydrate and about 2 to about 25 parts by weight of finely divided, low density polyethylene per 100 parts of alumina and an extrudable amount of water, extruding the mixture and calcining the mixture in a molecular oxygen-containing gas to substantially burn away the polyethylene and form a support. Additionally about 0.5 to 3 weight percent of starch and/or methyl cellulose may be included in the mixture prior to extrusion and calcination. These latter materials are also burned out of the support during the calcination.

3,679,606

THERMISTOR COMPOSITIONS AND THERMISTORS MADE THEREFROM

Oliver Alton Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 583,925, Oct. 3, 1966. This application Sept. 8, 1970, Ser. No. 70,571

Int. Cl. H01b *1/02*

U.S. Cl. 252—514 12 Claims

The invention relates to thermistor compositions which, upon being fired onto a ceramic substrate, yield glaze thermistors having resistance values of from about 500 to about 5,000 ohms/square and temperature coefficient of resistance values of from about −5,000 to −700 p.p.m./° C., consisting essentially of:

(I) 20 to 50% of a finely divided noble metal powder, and

(II) 50 to 80% of a finely divided inorganic binder powder.

The noble metal powder consists essentially of (a) 15 to 85% of a finely divided palladium or ruthenium powder or a mixture thereof, (b) 15 to 85% of a finely divided rhodium powder and (c) 0 to 12% of a finely divided silver or gold powder or a mixture thereof. The choice of metals, proportions thereof and proportions of inorganic binder are selected to provide thermistor compositions which then printed and fired will produce glaze thermistors possessing the desired resistances and temperature coefficients of resistance. Additionally, an inert vehicle may also be included to disperse the powders.

3,679,607

OXIDE RESISTOR MATERIALS

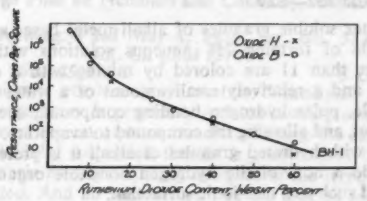
Hamish Carmichael Angus, High Wycombe, and Peter Edward Gainsbury, Ruislip, England, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Oct. 19, 1967, Ser. No. 676,515

Claims priority, application Great Britain, Oct. 24, 1966, 47,690/66

Int. Cl. H01b *1/02*

U.S. Cl. 252—518 15 Claims



Resistors made from compositions comprising ruthenium and/or iridium dioxides with fine crystallite size are characterized by low noise levels and low values of temperature coefficient of resistivity.

3,679,608

LOW FOAMING HARD SURFACE CLEANERS

Harry Julius Aubert, Center Township, Dearborn County, Ind., and Edward Carroll Gemperle, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Aug. 2, 1968, Ser. No. 749,597

Int. Cl. C11d *3/075*

U.S. Cl. 252—526 5 Claims

Low foaming hard surface cleaner composition comprising a foaming surfactant, a sequestrant builder and,

as a suds suppressor, the condensation product of a straight-chain random secondary alcohol with from 0 to about 3 moles of ethylene oxide.

3,679,609

CLEANING AND CONDITIONING CONCENTRATE COMPOSITIONS

Charles S. Castner, Reading, Pa., assignor to Schuyler Development Corporation

No Drawing. Filed July 28, 1969, Ser. No. 845,536

Int. Cl. C11d *3/066, 3/07*

U.S. Cl. 252—527 **7 Claims**

A concentrate composition made up of lower alcohols 30–40 parts, a selected glycol 14–18 parts, methyl Cellosolve 7–11 parts, ammonia 3–6 parts, higher alcohols and ethers 2–4 parts, detergents 1.5 to 2.5 parts, a member from the group alkaline earth borates, pyro phosphates, ortho phosphates and ortho silicates 0.5 to 1.5 parts, ethylene diamine tetracetate 0.25 to 0.75 part, a member from the group sodium and potassium hydroxide 0.1 to 0.5 part and water 20 to 30 parts, and which by the serial addition of water and active agents, can be predictably altered to produce a variety of different compositions, all of which have exceptional ranges of water extendability with slight diminution of surfactant conditioning efficiency; and, therefore, serve as highly effective cleansers and conditioners for a variety of hard surface finished, soft goods, fibre and fabric materials.

3,679,610

TINTED GRANULES

Robert H. Sams, Aldan, Robert W. Linton, Springfield, and Noboru R. Horikawa, Swarthmore, Pa., assignors to Philadelphia Quartz Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 748,644, July 30, 1968. This application Oct. 9, 1968, Ser. No. 766,281

Int. Cl. C11d *3/066*

U.S. Cl. 252—529 **8 Claims**

Water soluble granules of alkali metal bases and salts capable of forming 1% aqueous solutions with a pH greater than 11 are colored by mixing with a coloring agent and a relatively small amount of a water soluble, volatile, polar hydrogen bonding compound, such as an alcohol, and allowing the compound to evaporate. In some cases with hydrated granules of alkali it is preferable to include a non-volatile hydrogen bondable organic compound such as a non-ionic surfactant.

3,679,611

COMPOSITIONS WITH HYDROXYALKYL PIPERIDINE OR PYRROLIDINE OXIDES

John Fred Gerecht, Somerville, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Original application Nov. 13, 1967, Ser. No. 682,597, now Patent No. 3,547,932. Divided and this application Aug. 3, 1970, Ser. No. 60,754

Int. Cl. C11d *3/28, 1/22, 1/86*

U.S. Cl. 252—542 **10 Claims**

Compositions with hydroxy higher alkyl piperidine or pyrrolidine oxides particularly with a surface active agent have many beneficial effects in the detergent cosmetic fields.

3,679,612

DECORATIVE COMPOSITION AND PROCESS FOR PREPARING SAME

Witold Titow, Chessington, Surrey, England, assignor to Molins Limited, London, England

No Drawing. Continuation of application Ser. No. 598,953, Dec. 5, 1966. This application Sept. 23, 1970, Ser. No. 74,922

Claims priority, application Great Britain, Dec. 13, 1965, 52,818/65

Int. Cl. G03g *9/02;* **C08f** *47/20*

U.S. Cl. 260—2 **26 Claims**

This specification describes novel, dry particulate inks of substantially spherical shape which are composed of a polymeric binder, a colorant and a filler which is present to give the inks improved transfer characteristics when used in electrostatic printing. The inks may be produced by dispersing a solution of the ink composition (binder, colorant, filler plus any other additives) in another liquid and then evaporating off the binder solvent to form a suspension of the ink particles in the liquid. A melt of the ink composition may be used instead of a solution.

3,679,613

PROCESS FOR THE PRODUCTION OF POLYAMIDE FOAMS

Heinrich Gilch, Bonn-Ippendorf, and Hermann Schnell, Krefeld-Uerdingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of application Ser. No. 611,803, Jan. 26, 1967. This application Mar. 17, 1970, Ser. No. 20,400

Claims priority, application Germany, Feb. 4, 1966, F 48,347; July 22, 1966, F 49,764

The portion of the term of the patent subsequent to May 7, 1985, has been disclaimed

Int. Cl. C08j *1/22*

U.S. Cl. 260—2.5 N **9 Claims**

A process of preparing polyamide foams by heating a lactam or a mixture of lactams having at least 7 ring members with at least one mole percent of an organic isocyanate or masked isocyanate at a temperature above 130° C. in the presence of an alkali metal or alkaline earth metal compound wherein the mole ratio of isocyanate to metal compound is greater than 5:1.

3,679,614

METHOD FOR MAKING POROUS FIBROUS SHEETS CONTAINING POLYTETRAFLUOROETHYLENE

Girish Chandulal Shah and Mahesh Shantilal Shroff, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 24, 1969, Ser. No. 879,538

Int. Cl. B29d *27/00;* **C08f** *3/24*

U.S. Cl. 260—2.5 M **4 Claims**

In the manufacture of polytetrafluoroethylene fiber sheets an intermediate sheet was rigid until a continuous phase of polymethylmethacrylate (PMMA) has been extracted with solvents. The invention employs high concentration of plasticizer (e.g. terephthalate diesters) in the PMMA phase to render the intermediate sheet nonrigid hence easier to handle. Also plasticizer reduces working temperature for making the intermediate sheet, enabling incorporation of heat-sensitive fillers e.g. heat sensitive catalyst or low-melting polypyropylene incorporated fibers.

3,679,615
MULTI-COMPONENT ELECTROCOATING COMPOSITIONS

Allan E. Gilchrist, Westlake, Ohio, assignor to Ford Motor Company, Dearborn, Mich.

Division of application Ser. No. 518,620, Jan. 4, 1966, now Patent No. 3,532,613, which is a continuation-in-part of application Ser. No. 375,633, June 16, 1964, which is a continuation-in-part of applications Ser. No. 304,297, Aug. 14, 1963, now Patent No. 3,230,162, and Ser. No. 273,270, Apr. 16, 1963. Said application Ser. No. 304,297, being a continuation-in-part of application Ser. No. 249,812, Jan. 7, 1963, which is a continuation-in-part of applications Ser. No. 186,320, Apr. 10, 1962, now Patent No. 3,351,575, Ser. No. 132,303, Aug. 18, 1961, Ser. No. 183,024, Mar. 28, 1962, Ser. No. 186,496, Apr. 10, 1962, Ser. No. 202,691, June 15, 1962, and Ser. No. 218,575, Aug. 22, 1962. Said application Ser. No. 273,270, being a continuation-in-part of applications Ser. No. 249,812 and Ser. No. 258,913, Feb. 15, 1963, which is a continuation-in-part of applications Ser. Nos. 249,812, 186,320, 132,303, 183,024, 186,496, 202,691, and 218,575. This application June 25, 1970, Ser. No. 49,892

The portion of the term of the patent subsequent to May 7, 1986, has been disclaimed

Int. Cl. C09d *3/66, 5/02, 5/24*

U.S. Cl. 260—3.3 **16 Claims**

An aqueous dispersion of paint for use in the coating bath of an electrodeposition cell wherein the major fraction of the paint binder resin is a synthetic polycarboxylic acid resin and there is intimately dispersed therewith a minor fraction of discrete solid particles of an essentially non-ionizable adjunct resin that is fusible with the polycarboxylic acid resin at paint-baking temperature.

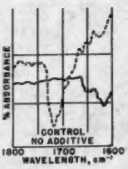
3,679,616
METHOD OF MAKING ETHYLENE SULFIDE POLYMERS BY ADDITION OF STABILIZERS TO REACTION MIXTURE PRIOR TO POLYMERIZATION

Jose L. Villa, Heightstown, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed July 30, 1970, Ser. No. 59,525

Int. Cl. C08g *23/00*

U.S. Cl. 260—18 R **14 Claims**



Ethylene sulfide polymers are stabilized against oxidative degradation by incorporating therein a small amount of finely divided copper or a copper salt essentially insoluble in and inert toward ethylene sulfide monomer. Representative copper salts are cuprous potassium cyanide, cupric hydroxide, cuprous cyanide, cupric carbonate, cupric sulfate and copper stearate. The stabilizing agent is incorporated in the polymerization mixture prior to polymerization. Known thermal stabilizing agents may be added to the polymer to improve its overall stability.

3,679,617
FLEXIBILIZED PHENOL-FORMALDEHYDE RESINS

Jack B. Boylan and Robert J. Sturwold, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed Sept. 22, 1969, Ser. No. 860,079

Int. Cl. C08g *5/20*

U.S. Cl. 260—19 R **8 Claims**

Internally flexibilized phenol-formaldehyde resins are prepared from formaldehyde, phenol and a phenolated oil obtained by reacting an excess of a phenolic compound with a non-conjugated, unsaturated oil in the presence of an active clay catalyst, the catalyst optionally containing a minor amount of a mineral acid.

3,679,618
ELECTRODEPOSITION OF FLUOROCARBON POLYMERS

James E. Lohr, Drexel Hill, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 7, 1969, Ser. No. 864,552

Int. Cl. C09d *3/52, 3/56;* **C23b** *13/00*

U.S. Cl. 260—21 **6 Claims**

The application of fluorocarbon polymer coatings on metal articles by electrodeposition is the subject of this invention; aqueous dispersions containing carboxylic acid polymer having an acid number of about 6–25 neutralized with a water soluble basic compound, such as ammonia, an amine, metal hydroxide, contain uniformly dispersed fluorocarbon polymer particles which can be electrodeposited on metal articles. Electrodeposition of fluorocarbon polymers is particularly useful in coating irregular shaped objects, such as screws, nuts and bolts, and is also useful in coating objects, such as cookware, tools and the like.

3,679,619
RIGID HALOGEN-CONTAINING RESIN COMPOSITIONS

Christian H. Stapfer, Newtown, Pa., and William B. Racz, Highland Park, N.J., assignors to Cincinnati Milacron Chemicals, Inc., Reading, Ohio

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,309

Int. Cl. C08f *45/04*

U.S. Cl. 260—23 XA **11 Claims**

Halogen-containing resin compositions containing an admixture of a lubricant and a synthetic silicate powder exhibit improved lubricity, stability and higher deflection temperatures.

3,679,620
UNIFORM ETHYLENE/VINYL ACETATE/N-METHYLOL ACRYLAMIDE TERPOLYMER DISPERSIONS

Aleksander Beresniewicz, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 1, 1970, Ser. No. 33,876

Int. Cl. C08f *15/40*

U.S. Cl. 260—29.6 TA **5 Claims**

A uniform ethylene/vinyl acetate/N-methylol acrylamide terpolymer is provided. A latex coating composition comprising an aqueous medium having the terpolymer colloidally suspended therein is provided. A coated textile fabric having a coating comprising the terpolymer is provided. And an improvement in the process for preparing an ethylene/vinyl acetate/N-methylol acrylamide terpolymer wherein the monomers are copolymerized in an aqueous dispersion system under ethylene pressure is provided. The improvement comprises maintaining the level of unreacted vinyl acetate monomer in the aqueous dispersion system at about 5–25 weight percent based on the total weight of the system at a given time during a substantial portion of the polymerization, continuously adding N-methylol acrylamide and vinyl acetate to the aqueous dispersion system in a substantially constant ratio and at a rate substantially the same as the rate of polymerization and continuously adding N-methylol acrylamide after completion of vinyl acetate addition in order to form a terpolymer having a uniform distribution of the N-methylol acrylamide. The terpolymer formed by the process of this invention has improved curability over prior art ethylene/vinyl acetate/N-methylol acrylamide terpolymers and, accordingly, provides superior coatings for textiles such as woven fabrics.

3,679,621

REACTION PRODUCTS OF CARBOXYLIC ACID POLYMERS, ALKYLENIMINES AND ALKYLENE OXIDES

Max Morf, Toms River, Markus Wenger, Beachwood, and Jutta Feisst, Toms River, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 771,356, Oct. 28, 1969. This application Jan. 28, 1970, Ser. No. 6,643

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 H 30 Claims

New water-soluble to water-dispersible reaction products are provided which are obtained by condensing a carboxylic acid polymer with an alkylenimine and an alkylene oxide. A typical product of the present invention is obtained by condensing a polyacrylic acid with ethylenimine and propylene oxide. The novel condensation products of the present invention have a plurality of utilities. The condensation products of this invention exhibit properties which make them especially useful in paper-making applications as drainage aids, flotation aids, flocculating aids, retention aids, and as wet strength resins.

3,679,622

NITROALKYL PIPERAZINES AS ANTIBACTERIAL AGENTS IN AQUEOUS PAINT SOLUTIONS

Nathaniel Grier, Englewood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application June 21, 1968, Ser. No. 738,843, which is a division of application Ser. No. 457,802, May 21, 1965, now Patent No. 3,399,199, dated Aug. 27, 1968. Divided and this application Apr. 23, 1971, Ser. No. 137,048

Int. Cl. C08d *7/12*

U.S. Cl. 260—29.7 N 2 Claims

Antimicrobial compositions containing piperazine nitroalkanes useful as soil sterilants and algicides, etc., for agricultural and industrial application.

3,679,623

COMPOSITIONS OF POLY (ALKYL VINYL ETHER/MALEIC ANHYDRIDE) WITH PHOSPHATE ESTER SURFACTANT

Thomas S. Mestetsky and Edwin M. Smolin, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed June 12, 1970, Ser. No. 45,893

Int. Cl. C08f *29/12*

U.S. Cl. 260—31.2 R 6 Claims

Film forming compositions, which give hard glossy, water-dispersible films and which are particularly useful for coating or saturating fibrous sheet material such as paper and woven and non-woven textiles, are prepared by compounding (intimately mixing), in solution, 1 to 5 parts by weight of a water-soluble phosphate ester surfactant with 1 part by weight of an alkyl vinyl ether polymer selected from the group consisting of homopolymers of alkyl vinyl ethers in which the alkyl groups have from 1 to 18 alkyl carbon atoms and copolymers of such alkyl vinyl ethers with each other or with maleic anhydride. Such compositions when applied to paper and similar sheet material as a coating can serve both as a remoistenable adhesive and a heat sealable adhesive. They can also be applied to paper etc. either as a coating or saturant to decrease the porosity of the sheet, increase its stiffness or tensile strength. The water sensitivity of the films produced by such compositions may be modified by incorporating a wood rosin ester (which may be either hydrogenated or unhydrogenated) or a hydrocarbon resin in the composition. Various other additives, such as pigments to increase the opacity of the resulting films, may also be incorporated in the compositions.

3,679,624

POLYAMIDES

Owen Burchell Edgar, Manchester, William Hughes, Norton, Derek Robert Lawrance, Abergavenny, Gerald Lederer, Stockton-on-Tees, and Colin Foster Ritchie, Manchester, England, assignors to Imperial Chemical Industries Limited, London, and British Titan Products Company Limited, Billingham, England

No Drawing. Continuation of application Ser. No. 684,542, Nov. 20, 1967. This application Sept. 25, 1970, Ser. No. 75,778

Claims priority, application Great Britain, Nov. 25, 1966, 52,828/66

Int. Cl. C08g *45/56, 51/04*

U.S. Cl. 260—37 N 9 Claims

Polyamide compositions comprising a synthetic linear fibre-forming polyamide, a delustering agent (especially titanium dioxide), a manganese compound and an antimony compound, and optionally a copper compound and a halide, or a phenol and hypophosphorous acid or a salt thereof; processes for their manufacture; and titanium dioxide pigments suitable for use in their manufacture containing chemically combined antimony and having a coating containing chemically combined manganese.

3,679,625

POLYSILOXANES IN ADMIXTURE WITH HYDRATES OR CARBONATES USEFUL FOR REMOVING HYDROCARBONS FROM TOBACCO SMOKE

Edward W. Merrill, Cambridge, Mass., assignor to Hans H. Estin, Leonard W. Cronkhite, Jr., and William W. Wolbach, Trustees of the Charles River Foundation

Filed Dec. 29, 1969, Ser. No. 888,505

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 SB 6 Claims

Polynuclear aromatic hydrocarbons (PAH) can be absorbed and thereby removed from tobacco gas-smoke by polysiloxane compositions. The polysiloxane may be present in the tobacco to absorb the PAH at or near the combustion zone, or placed in a "filter" section downstream from the combustion zone. Endothermic fillers in the polysiloxane and high polysiloxane to tobacco ratios are effective to reduce the combustion temperature and minimize desorption of previously absorbed PAH.

3,679,626

THERMOPLASTIC TRAFFIC PAINTS AND PROCESS FOR THE MANUFACTURE THEREOF

Toshimi Tanekusa, Fujisawa-shi, Hideaki Takasawa, Yokohama, and Achihiko Yamahata, Tokyo, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

No Drawing. Filed June 23, 1967, Ser. No. 648,210

Claims priority, application Japan, July 21, 1966, 41/47,356

Int. Cl. C08f *45/04;* E01c *23/16*

U.S. Cl. 260—41 A 1 Claim

A process for manufacturing a thermoplastic traffic marking paint including the steps of mixing at room temperature a liquid plasticizer and a nucleus component to coat the nucleus with the plasticizer, and thereafter adding to said mixture a thermoplastic resin, a pigment and additive ingredients selected from an aggregate of silica sand, glass spheres, a lubricant, an antioxidant, an antiblocking agent and mixtures thereof, to form a uniform powdered mixture which is easily melted on heating to form a fast

drying marking material which is easily applied to a road surface and has good shock resistance, adherence, cold resistance and abrasion resistance characteristics.

3,679,627

HYDROXYLATED ALPHA-OLEFIN/NON-CONJUGATED DIENE POLYMER

Jerald R. Harrell, Anestis L. Logothetis, and John J. Verbanc, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 764,328, Oct. 1, 1968. This application July 9, 1969, Ser. No. 840,511

Int. Cl. C08d *11/00*

U.S. Cl. 260—41.5 6 Claims

An hydroxylated alpha-olefin/non-conjugated diene polymer having hydroxylated side chains in admixture with clay, ZnO, $ZnBr_2$, a phenol-formaldehyde resin or polyisocyanate. An hydroxylated alpha-olefin/non-conjugated diene polymer having hydroxyl substituted side chains containing one hydroxyl group each and other side chains containing ethylenic unsaturation and a process for making.

3,679,628

THERMOPLASTIC POLYESTER MOULDING COMPOSITIONS CONTAINING BORON NITRIDE

Ludwig Brinkmann and Walter Herwig, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 22, 1970, Ser. No. 57,312
Claims priority, application Germany, July 29, 1969, P 19 38 436.2

Int. Cl. C08g *39/10, 51/10*

U.S. Cl. 260—45.7 PS 13 Claims

Polyester compositions suitable for injection moulding are provided which do not exhibit discoloration or discolor to a minor extent only during manufacturing and processing. The compositions consist of linear saturated polyesters, boron nitride and compounds containing S—O—Na or P—O—Na groups in their chemical structure.

3,679,629

METHOD FOR STABILIZING POLYCARBONATES AND COMPOSITIONS MADE THEREBY

Alan J. Chalk and Arnold Factor, Scotia, N.Y., assignors to General Electric Company

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,492

Int. Cl. C08g *51/04, 51/58*

U.S. Cl. 260—37 PC 4 Claims

A method is provided for improving the resistance of polycarbonate resins to yellowing, resulting from molding the resin at temperatures between 500° F.–700° F. There is utilized an effective amount of an organosilicon hydride such as trihexylsilane. There also is provided polycarbonate compositions made by such method exhibiting stability toward color change during molding and subsequent fabrication.

3,679,630

CURABLE COMPOSITIONS COMPRISING A POLYEPOXIDE, A POLYISOCYANATO SILANE AND A CATALYST THEREFOR

Frederick P. Corson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,326

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN 9 Claims

Curable epoxide compositions comprise (a) a polyepoxide such as the diglycidyl ether of bisphenol A, (b) a polyisocyanatosilane such as diisocyanatodiphenylsilane and (c) a curing catalyst therefor such as a phosphonium compound, a quaternary ammonium halide, an alkali metal halide or cyanate, an aliphatic tertiary amine, or a tertiary phosphine.

3,679,631

HIGHER HEAT SET SPANDEX PREPARED FROM A MIXTURE OF A POLYETHER OR POLYESTER PREPOLYMER AND A DIHYDRIC PHENOL AND METHOD OF PREPARATION

Nathan Mayes, Barrington, R.I., assignor to Globe Manufacturing Company, Fall River, Mass.

No Drawing. Filed Feb. 8, 1971, Ser. No. 113,609

Int. Cl. C08g *22/10, 22/14*

U.S. Cl. 260—47 CB 16 Claims

The heat setting of cross-linked spandex can be increased by adding a dihydric phenol, preferably bisphenol A, to the preformed polyester or polyether prior to reaction with the organic polyisocyanate and subsequently curing, e.g., with a polyamine. The use of the dihydric phenol also permits faster curing of the spandex at lower temperature.

3,679,632

POLYAMIDE ACID COMPOSITION AND METHOD OF PREPARATION

Ralph G. Flowers, Pittsfield, and Thomas L. Sherer, Richmond, Mass., assignors to General Electric Company

No Drawing. Continuation-in-part of application Ser. No. 641,131, May 25, 1967. This application Dec. 29, 1969, Ser. No. 888,852

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CP 4 Claims

A polyamide-acid is prepared by reacting a dianhydride with a diamine formed from the reaction of a diepoxide compound and a diamine. The resultant polyamide-acid is then converted to a polyimide by heating. The polyimide compound is useful for electrical insulating purposes, especially in the form of coatings on electrical conductors.

3,679,633

ELONGATION-SET POLYURETHANE ELASTOMERIC FIBERS AND PROCESS OF PREPARATION

Kanji Matsubayashi and Hiroyuki Segawa, Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation of application Ser. No. 498,470, Oct. 20, 1965. This application Jan. 6, 1970, Ser. No. 924
Claims priority, application Japan, Dec. 19, 1964, 39/71,840

Int. Cl. C08g *22/08, 53/20;* C01f *7/06*

U.S. Cl. 260—75 NE 4 Claims

Elongation-set polyurethane elastomeric fibers are prepared by drawing the fiber formed from a reaction product of a polymeric diol having a molecular weight between 200 and 8,000, an organic diisocyanate and a glycol and heat treating the drawn fiber to reduce the elongation to a value not exceeding 150%.

3,679,634

POLYMERS OF FLUORINATED ETHYLENE IMINES AND THEIR USE FOR TEXTILE FINISH

Erich Schuierer and Werner Renz, Burghausen, and Hans Sommer, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 27, 1970, Ser. No. 58,648
Claims priority, application Germany, Aug. 8, 1969, P 19 40 351.1

Int. Cl. C08g *22/02*

U.S. Cl. 260—77.5 B 4 Claims

Fluorinated polymers and copolymers are obtained by reacting toluene diisocyanate with fluorinated alkanols, optionally in admixture with fluorine-free alkanols, and ethylene imine and polymerizing the so-obtained ethylene

imine ureas in the presence of boron trifluoride. The polymers and copolymers are water- and oil-repellent agents for fibrous materials, especially textiles.

3,679,635

OPERATION OF POLYAMIDE CONTINUOUS POLYMERIZATION SYSTEM

Bruce W. Portus, Greenville, S.C., assignor to Fiber Industries, Inc.

No Drawing. Filed July 8, 1970, Ser. No. 53,270
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **7 Claims**

Polyamide continuous polymerization system is operated by maintaining inert, substantially oxygen-free blankets through the system during start-up and shutdown periods.

3,679,636

FORMATION OF AROMATIC POLYAMIDES IN GAMMABUTYROLACTONE AS MUTUAL SOLVENT FOR AROMATIC DIAMINES, AND 2,6-LUTIDINE

Elliot A. Vogelfanger, Edison, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Sept. 26, 1969, Ser. No. 861,491
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **7 Claims**

Aromatic diamines and aromatic diacid halides are reacted to form high-molecular weight polyamides in a mutual solvent system comprising anhydrous gammabutyrolactone and at least one amine acid acceptor, e.g., 2,6-lutidine.

3,679,637

CATIONIC PRECIPITATION POLYMERIZATION OF VINYL CARBAZOLE

Eugene V. Hort, Piscataway, N.J., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed Mar. 12, 1970, Ser. No. 19,092
Int. Cl. C08f *7/16*
U.S. Cl. 260—88.3 **10 Claims**

A process is provided for obtaining particulate low molecular weight poly(vinyl carbazole) comprising charging (1) monomeric vinyl carbazole, (2) an inert, organic solvent for said vinyl carbazole, said solvent being a non-solvent for the resulting polymer and (3) a catalytically effective amount of a cationic polymerization catalyst to a polymerization zone; maintaining the resulting mixture in said zone at a temperature ranging from about −50° C. to about +100° C. for a period of time sufficient to cause polymerization of said monomer and substantially simultaneous precipitation of discrete particles of poly(vinyl carbazole) forming a polymer slurry, and thereafter recovering said polymer from said slurry.

3,679,638

PREPARING FINELY DIVIDED COPOLYAMIDES BY PRECIPITATION FROM ALCOHOL-WATER SOLUTION

Hans Helmuth Korsgen, Praroman-Le Mouret, and Wolfgang Weller, Bulle, Switzerland, assignors to Coathylene S.A., Fribourg, Switzerland

No Drawing. Filed Apr. 8, 1970, Ser. No. 26,801
Claims priority, application Austria, Apr. 14, 1969, A 3,591/69
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 S **16 Claims**

Very finely divided powdered copolyamides, particularly ternary copolyamides melting between 100°–200° C., are prepared by first dissolving the copolyamide in a mixture of C_1–C_5 alcohol and water containing a dissolved ionizable salt as a precipitation aid, and thereafter removing the solvent as by evaporation.

3,679,639

CURABLE COMPOSITIONS OF AN UNSATURATED BIS-AMIDE, A DIAMINE, AND A MULTICYCLIC AROMATIC COMPOUND

Michel Bargain, Lyon, Max Gruffaz, Le Mulatiere, Serge Laurent, Bron, and Maurice Mallet, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Apr. 16, 1970, Ser. No. 29,286
Claims priority, application France, Apr. 18, 1969, 6912222
Int. Cl. C08g *20/00*
U.S. Cl. 260—78 U **8 Claims**

Compositions curable by heating to give resins of good heat resistance comprise (a) a prepolymer of an N,N'-bis-imide of an unsaturated dicarboxylic acid and a diamine and (b) an aromatic compound of 2 to 3 benzene rings.

3,679,640

METHOD FOR MAKING HYDRAZINE DERIVATIVES OF COPOLYMERS OF VINYL AROMATIC COMPOUNDS AND α,β-UNSATURATED DICARBOXYLIC ACIDS OR ANHYDRIDES

Eugene R. Moore and William R. R. Park, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 583,435, Sept. 30, 1966. This application Sept. 25, 1969, Ser. No. 861,167
Int. Cl. C08f *27/08*
U.S. Cl. 260—78.5 T **4 Claims**

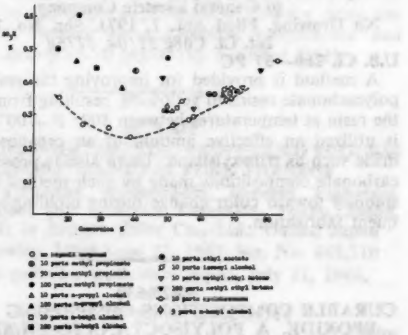
The invention concerns a method for making hydrazine derivatives of resinous copolymers of monovinyl aromatic compounds and α,β-monoethylenically unsaturated dicarboxylic acids or their anhydrides.

3,679,641

PRODUCTION OF ACRYLONITRILE UNSATURATED SULFONIC ACID COPOLYMERS

Kenji Takeya, Saidaiji, Japan, assignor to Japan Exlan Company Limited, Osaka, Japan

Continuation-in-part of application Ser. No. 672,892, Oct. 4, 1967. This application May 27, 1970, Ser. No. 40,930
Claims priority, application Japan, Oct. 18, 1966, 41/68,756
Int. Cl. C08f *15/02, 15/40*
U.S. Cl. 260—79.3 MU **1 Claim**



Copolymers of at least 80% of acrylonitrile, about 0.1 to 5% of an ethylenically unsaturated organic sulfonic acid or a salt thereof and up to 19.9% of at least one ethylenically unsaturated monomer which is copolymerizable with acrylonitrile and the aforesaid sulfonic acid or its salt, are prepared in aqueous polymerization medium in the presence of an organic compound which is a non-solvent for the copolymer but is a solvent for the monomer(s) other than the sulfonic acid or its salt.

3,679,642

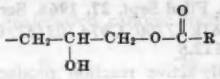
HYDROXYL CONTAINING COPOLYMERS

Joseph A. Vasta, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

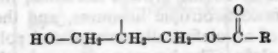
No Drawing. Filed Oct. 8, 1970, Ser. No. 79,348
Int. Cl. C08f *15/00, 15/40*
U.S. Cl. 260—80.72 8 Claims

Polymers of ethylenically unsaturated monomers, containing

(A) at least 5% by weight of the total polymer of ethylenically unsaturated carboxylic acid monomer units having active hydrogen atoms replaced with



and/or



radicals, wherein R is a tertiary aliphatic hydrocarbon radical having the structure

where R_1 is $—CH_3$ and R_2 and R_3 are alkyl groups of 1–12 carbon atoms; and

(B) up through 10% by weight of the total polymer of vinyl pyrrolidone units, and coating compositions containing such polymers.

3,679,643

COPOLYMERS OF ACRYLONITRILE WITH NITROGENOUS MONOMERS AND PROCESS FOR THEIR PREPARATION

Giulio Natta, Ferdinando Danusso, and Paolo Ferruti, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Feb. 13, 1969, Ser. No. 798,949
Claims priority, application Italy, Feb. 16, 1968, 12,832/68
Int. Cl. C08f *15/22*
U.S. Cl. 260—85.5 R 5 Claims

A new composition of matter comprising a copolymer of acrylonitrile and an enamine having the general formula:

wherein R is an aliphatic, cycloaliphatic or aromatic hydrocarbon residue, R′ and R″ may be the same or different, and are aliphatic, cycloaliphatic or aromatic hydrocarbon residues or hydrogen and X is a radical derived from a secondary amine by removal of the hydrogen atom bound to the nitrogen are disclosed. Copolymer is prepared by reacting acrylonitrile and the enamine in the presence of a free radical initiator.

3,679,644

POLYALKYLMETHACRYLATES AS POUR POINT DEPRESSANTS FOR LUBRICATING OILS

Pieter H. van der Meij and Arnold A. Buitelaar, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Original application Aug. 19, 1968, Ser. No. 753,777, now Patent No. 3,598,736, dated Aug. 10, 1971. Divided and this application July 15, 1970, Ser. No. 56,231
Claims priority, application Great Britain, Aug. 30, 1967, 39,700/67
Int. Cl. C08f *3/64, 3/66, 15/18*
U.S. Cl. 260—86.1 E 4 Claims

Pour points of lubricating oils with widely varying viscosities are depressed by adding thereto small amounts of novel oil soluble polyalkylmethacrylates.

3,679,645

FREE RADICAL PRECIPITATION POLYMERIZATION OF VINYL CARBAZOLE

Eugene V. Hort, Piscataway, N.J., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed Mar. 12, 1970, Ser. No. 19,073
Int. Cl. C08f *7/16*
U.S. Cl. 260—88.3 11 Claims

A process is provided for obtaining particulate high molecular weight poly(vinyl carbazole) comprising charging (1) monomeric vinyl carbazole, (2) an inert organic solvent for said vinyl carbazole, said solvent being a nonsolvent for the resulting polymer, and (3) a catalytically effective amount of a free radical polymerization catalyst to a polymerization zone; heating the resulting mixture in said zone at a temperature ranging from about 45° C. to about 150° C. for a period of time sufficient to cause polymerization of said monomer and substantially simultaneous precipitation of discrete particles of poly(vinyl carbazole) forming a polymer slurry, and thereafter, recovering said polymer from said slurry.

3,679,646

PREPARATION OF POLYVINYL ALCOHOL HAVING IMPROVED COLOR PROPERTIES BY TREATING THE POLYVINYL ESTER WITH AN ALKALI METAL BOROHYDRIDE

John E. Bristol, Niagara Falls, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 5, 1970, Ser. No. 61,464
Int. Cl. C08f *27/16*
U.S. Cl. 260—91.3 PV 5 Claims

Polyvinyl alcohol having improved color properties is prepared in a process in which an alcoholic solution of the polyvinyl ester utilized to prepare the polyvinyl alcohol is treated with an alkali metal borohydride prior to the alcoholysis of the polyvinyl ester to the corresponding polyvinyl alcohol.

3,679,647

PREPARATION OF POLYVINYL ALCOHOL HAVING IMPROVED COLOR PROPERTIES BY TREATING THE POLYVINYL ESTER WITH MAGNESIUM METAL

John E. Bristol, Niagara Falls, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 5, 1970, Ser. No. 61,483
Int. Cl. C08f *27/16*
U.S. Cl. 260—91.3 PV 10 Claims

Polyvinyl alcohol having improved color properties is prepared in a process in which an alcoholic solution of the polyvinyl ester utilized to prepare the polyvinyl alcohol is treated with magnesium metal, in the presence of an acid such as acetic acid or sulfuric acid, prior to the alcoholysis of the polyvinyl ester to the corresponding polyvinyl alcohol.

3,679,648

PREPARATION OF POLYVINYL ALCOHOL HAVING IMPROVED COLOR PROPERTIES BY TREATING THE POLYVINYL ESTER WITH AN ALKALINE EARTH METAL HYDRIDE

John E. Bristol, Niagara Falls, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 5, 1970, Ser. No. 61,466
Int. Cl. C08f *27/16*
U.S. Cl. 260—91.3 PV 6 Claims

Polyvinyl alcohol having improved color characteristics is prepared in a process in which an alcoholic solution of the polyvinyl ester utilized to prepare the polyvinyl alcohol is treated with an alkaline earth metal hydride prior to the alcoholysis of the polyvinyl ester to the corresponding polyvinyl alcohol.

3,679,649

POLYVINYL ALCOHOL ESTERIFICATION IN N-METHYL-2-PYRROLIDONE

Harlan B. Freyermuth, Easton, and Nathan D. Field, Allentown, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,816

Int. Cl. C08f *27/12*

U.S. Cl. 260—91.3 VA **5 Claims**

A process of esterifying polyvinyl alcohol using N-methyl-2-pyrrolidone as a solvent is disclosed.

3,679,650

PROCESS FOR THE PRECIPITATION POLYMERIZATION OF α-METHYLSTYRENES WHICH MAY BE SUBSTITUTED

Herbert Schott, Hofheim, Taunus, and Walter Herwig, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 13, 1970, Ser. No. 63,616

Claims priority, application Germany, Aug. 19, 1969, P 19 42 017.8

Int. Cl. C08f *7/04, 1/08*

U.S. Cl. 260—93.5 S **8 Claims**

A process is disclosed for the precipitation polymerization of α-methylstyrene, which may be substituted, in the presence of a hydrocarbon inert to alkali metals, at least one finely divided alkali metal, a phosphoric acid amide as accelerator and a co-accelerator, at temperatures within the range of from —20° C. to +40° C. The polymers thus are obtained in a grainy, filterable form.

3,679,651

METHOD OF POLYMERIZING STYRENE

Toshimichi Kii, Tokyo, and Motoshi Suka, Yokohama, Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

Filed Aug. 29, 1968, Ser. No. 756,270

Int. Cl. C08f *1/04, 1/06, 7/04*

U.S. Cl. 260—93.5 S **3 Claims**

Process for treating viscous fluids, such as are obtained during the polymerization of monomers, e.g., styrene, comprising, continuously feeding the fluid to and agitating the fluid in a mixing and reaction zone wherein it is caused to flow in reverse directions at high flow rates and into contact with heat exchange surfaces whereby the polymerizing mixture is simultaneously and perfectly mixed while a large amount of sensible heat is absorbed, subjecting the fluid to one or more stages wherein it is continuously moved through a tubular heat exchange zone, then through an annular heat exchange zone containing, in addition, heat exchange tubes, accompanied by recirculating at high flow rates of the fluid from one zone to the other while contacting it with heat exchange surfaces and while maintaining as small a temperature differential between the heat exchange surfaces and the fluid as provides the desired heat exchange.

3,679,652

OLEFIN POLYMERIZATION CATALYST AND PROCESS

Arthur William Anderson, Windsor Hills, Wilmington, and William Lawrence Truett, Mayfield, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 15, 1956, Ser. No. 584,887

Int. Cl. C08f *1/38, 3/06*

U.S. Cl. 260—94.9 B **3 Claims**

Alpha-olefins are polymerized with a catalyst prepared by reacting a metal above hydrogen in the electromotive series with a transition metal halide. The character of the polymer and the yield are dependent upon the fineness of the metal component, which should be below 10 microns.

3,679,653

HORMONALLY-ACTIVE REACTION PRODUCT OF A POLYMER WITH A HORMONE

James M. Schuck, Chesterfield, and Bernard S. Wildi, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 27, 1968, Ser. No. 763,364

Int. Cl. A61k *17/00*; C07c *103/52*; C08f *27/08*

U.S. Cl. 260—112.5 **9 Claims**

A hormonally-active reaction product of a peptidic hormone such as bovine growth hormone, insulin, vasopressin, adrenocorticotropic hormone, and the like, with a copolymer of an olefinically unsaturated polycarboxylic acid and an olefin. The hormone is covalently bound to the polymer through an amino, hydroxyl, or sulfhydryl group of the hormone which is not essential for hormonal activity. These products have improved stability, are substantially odorless and colorless, and have prolonged activity when contrasted with the native hormone.

3,679,654

INTERFERON OR VIRAL INHIBITOR PROTEIN INDUCTION

Roland Maes, Rio de Janeiro, Brazil (94 Bondgenotenlaan, 3000 Leuven, Belgium)

Filed Aug. 11, 1969, Ser. No. 848,959

Claims priority, application Brazil, Aug. 20, 1968, 201,650

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **10 Claims**

Complex substances capable of provoking the release or formation of interferon or viral inhibitory proteins when introduced into a host are produced by reacting single-stranded or multi-stranded nucleic acid polymers with cationically charged polymers having a molecular weight between about 10^3 and 10^8 in specified proportions, e.g. 10 parts of nucleic acid polymer to 1 part to 100 parts cationic polymer by weight.

3,679,655

N,N-DISUBSTITUTED AMINOETHYLCARBAMYL PROTECTING GROUPS FOR CYSTEINE

Georg Jager, Raunheim (Main), and Rolf Geiger, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed June 20, 1969, Ser. No. 835,259

Claims priority, application Germany, June 28, 1968, P 17 68 777.3; July 31, 1968, P 17 93 089.1; June 14, 1969, P 19 30 330.1

Int. Cl. C07c *101/00, 103/52, 155/08*

U.S. Cl. 260—112.5 **2 Claims**

A method of protecting the sulfur atom of cysteine in peptide synthesis by reaction with β-[N,N-disubstituted]-aminoethyl isocyanate in which one substituent is methyl or ethyl and the other is benzyloxycarbonyl, t-butyloxycarbonyl, or adamantyloxycarbonyl. For removal of the protective group, the peptide is treated with a strong acid to form the acid salt of the corresponding monosubstituted N-ethyl or N-methyl amino compound and then made alkaline to liberate the amine. The protective group cleaves intramolecularly with formation of a methyl or ethyl-substituted imidazolone and the peptide in which the cysteine sulfur atom is present as sulfhydryl.

3,679,656

QUATERNIZED 1,2,4-TRIAZOLIUM-3-AZO DYESTUFFS

Masao Iizuka, Norio Igari, and Shigeo Maeda, Tokyo, Japan, assignors to Hodogaya Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

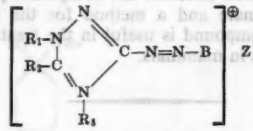
Filed May 15, 1969, Ser. No. 824,774

Claims priority, application Japan, May 20, 1968, 43/33,539

Int. Cl. C09b *29/00, 29/34, 43/00*

U.S. Cl. 260—157 11 Claims

Water-soluble quaternized cationic monoazo dyestuffs of the formula



wherein B is a residue of a coupling component and R_1, R_2, R_5 and $Z^{\ominus}$ are the radicals individually defined in the specification and claims. The cationic monoazo dyestuffs are suitable for the dyeing of various materials such as paper, mordant-treated cellulose fibers, acetate fibers, silk, leather, polyester fibers and the like and especially for the dyeing of fibrous materials made of polyacrylonitrile or copolymers thereof. The dyeings in orange to reddish violet shades obtained with the new dyestuff possess an excellent fastness to light, washing and the like. The dyestuff is further characterized by the fact that the resulting dyeing can be more completely discharged by treatment with stannous chloride than the dyeings obtained by analogous dyestuffs hitherto known.

3,679,657

MONOAZO DYESTUFFS

Nalin Binduprasad Desai and Ponnusami Jayaraman, Goregaon-Bombay, India, Visvanathan Ramanathan, Basel, and Klaus Artz, Muttenz, Switzerland, Navnitrai Nagarji Naik, Goregaon-Bombay, India, and Walter Jenny, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Mar. 11, 1969, Ser. No. 806,291

Claims priority, application Switzerland, Mar. 18, 1968, 3,958/68

Int. Cl. C09b *29/08*

U.S. Cl. 260—205 4 Claims

Dyestuffs containing at least one group of formula —X—CO—NR—SO_2, wherein R is a hydrogen atom or an optionally substituted alkyl, cycloalkyl, aryl, or heterocyclic group, and X is an oxygen or sulphur atom or a group of formula —NR_1—, where R_1 is a hydrogen atom or an optionally substituted alkyl, cycloalkyl, aryl or heterocyclic group.

3,679,658

CALCIUM CARBOXYLALKYL ETHERS OF GALACTOMANNAN GUMS

Mao Hsun Yueh and Eugene D. Schilling, Minneapolis, Minn., assignors to General Mills, Inc.

No Drawing. Continuation-in-part of application Ser. No. 680,016, Nov. 2, 1967. This application Feb. 3, 1970, Ser. No. 8,440

Int. Cl. C07c *47/18*

U.S. Cl. 260—209 R 7 Claims

A thickening and fiber forming composition comprised of a carboxymethyl galactomannan in which at least part of the carboxymethyl group is present as the calcium salt and the degree of substitution is 0.6–2.0 and a process for the making of the salt which comprises mixing of the carboxymethyl galactomannan or a soluble salt thereof with a compound containing calcium in an aqueous medium.

3,679,659

PROCESS FOR THE PREPARATION OF SODIUM GLUCOHEPTONATE

Henry C. Zak, Great Notch, N.J., assignor to Belzak Corporation, Clifton, N.J.

No Drawing. Filed Dec. 18, 1969, Ser. No. 886,398

Int. Cl. C07c *47/18*

U.S. Cl. 260—209 R 12 Claims

A soluble cyanide is reacted with dextrose hydrate or anhydrous dextrose, for example, in an aqueous solution having a total solids content of 50–65% by weight at 0°–40° C. while removing ammonia produced in the reaction by sparging or vacuum over a period of 4–12 hours, whereby a pure light colored alpha glucoheptonate salt crystallizes directly from solution in high yield. A second crop of crystalline alpha glucoheptonate salt is obtained by concentrating the mother liquor; the remaining mother liquor being a desirably light colored solution in the beta isomer. Glucoheptonic acid and its lactone are obtained from the salts. The process is also operable with other 6-carbon atom aldo- and keto-sugars; e.g. with invert sugar to produce alpha and beta glucoheptonate and alpha and beta fructoheptonate. The process provides solutions of glucoheptonates capable of being spray dried according to conventional techniques to provide dry, crystalline glucoheptonates.

3,679,660

GLUCOSAMINE-ALKYLSULFONATE AND PROCESS

Agatha C. Magnus, 430 LaLoma Road, Pasadena, Calif. 91105

No Drawing. Filed June 9, 1969, Ser. No. 831,734

Int. Cl. C07c *95/04*

U.S. Cl. 260—211 R 2 Claims

The disclosure relates to a series of food and pharmaceutical additives comprising molecules which, when in aqueous solution, form an ion with a terminal hydrophilic group and a terminal hydrophobic group. Particularly useful compounds include amine salts joined to the hydrophobic group, alkane sulfonic acids joined to the hydrophobic group and cholesterics. A new chemical, glucosamine-n-alkylsulfonate is also disclosed.

3,679,661

PREPARATION OF WATER-SOLUBLE, DYED SUBSTRATES FOR AMYLASE ASSAY

Arthur L. Babson, Morristown, N.J., assignor to Warner-Lambert Company, Morris Plaines, N.J.

No Drawing. Continuation-in-part of application Ser. No. 771,354, Oct. 28, 1968, now Patent No. 3,597,322, dated Aug. 3, 1971, which is a continuation-in-part of abandoned application Ser. No. 521,814, Jan. 20, 1966. This application Dec. 21, 1970, Ser. No. 100,373

Int. Cl. C08b *19/00, 19/12*

U.S. Cl. 260—233.3 R 14 Claims

Water-soluble, dyed substrates for use in assaying amylase activity in such media as body fluids, plant extracts, and the like, are prepared by coupling, in an aqueous alkaline solution, a reactive dye with a starch or

starch fraction, such as amylose or amylopectin and removing all unreacted dye from the water-soluble substrate obtained. Gel filtration or dialysis can be used as the purification process, provided the process is monitored to detect the presence of free dye in the purified solution of dyed substrate. To monitor the purification procedure, an alcoholic tannic acid precipitating agent is used to precipitate the dyed substrate from a sample of the solution being purified and the supernatant fluid is observed for the presence of color; color in the supernatant fluid indicates that some free dye remains, and that the dyed substrate solution requires further purification. The preferred precipitating agent contains a 0.5% to 2% tannic acid in 50% alcohol, buffered to a pH of 5.0 to 5.5 and brought to a temperature of from about 20° C. to about 30° C.

3,679,662

TETRAHYDROCYCLOPROPADIBENZAZEPINE DERIVATIVES

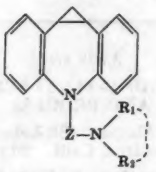
Katsura Morita and Kenya Kawashima, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed June 9, 1970, Ser. No. 44,895

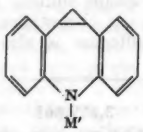
Claims priority, application Japan, June 20, 1969, 44/48,750, 44/48,751; Mar. 3, 1970, 45/18,103; Apr. 27, 1970, 45/36,176

Int. Cl. C07d *41/08, 57/00, 99/04*
U.S. Cl. 260—239 D **8 Claims**

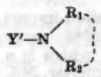
Novel compounds of the general formula



(wherein Z stands for a lower alkylene or a carbonyl group, each R_1 and R_2 stands for hydrogen atom, an alkyl group, or an aryl group, and R_1 and R_2 may form with the adjacent nitrogen atom a heterocyclic group) or its pharmaceutically acceptable salts, are prepared by reacting



with a compound of the general formula



[wherein R_1 and R_2 have the same meaning as above, and one of M' and Y' is hydrogen atom and the other is a radical of Y—Z (wherein Y stands for a halogen atom and Z has the same meaning as above)], and if desired, converting the resultant to pharmaceutically acceptable salts. The novel compounds are useful as psychotropic drugs such as antidepressants, major tranquilizers, anti-Parkinson agents, antihistaminic agents, anticonvulsants and antiepileptics.

3,679,663

PIVALOYLOXYMETHYL HETACILLIN

John Michael Essery, Fayetteville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Oct. 28, 1970, Ser. No. 84,743

Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **1 Claim**

The specification discloses the compound pivaloyloxymethyl hetacillinate and a method for the preparation thereof. This compound is useful in the treatment of infectious diseases in mammals.

3,679,664

3-AZA-A-HOMO-STEROIDS

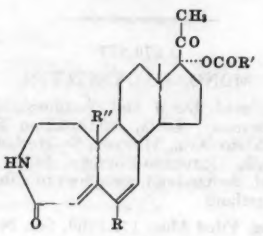
Arvin Pranlal Shroff, Somerville, N.J., assignor to Ortho Pharmaceutical Corporation

No Drawing. Original application June 18, 1965, Ser. No. 465,175. Divided and this application Jan. 14, 1970, Ser. No. 7,326

The portion of the term of the patent subsequent to July 15, 1986, has been disclaimed

Int. Cl. C07c *169/36;* C07d *101/00*
U.S. Cl. 260—239.3 P **4 Claims**

Compounds of the formula:



wherein R is hydrogen, methyl, ethyl, chlorine, bromine or fluorine, R' is hydrogen or alkyl from 1 to 11 carbon atoms and R'' is hydrogen or methyl, are potent progestational agents and possess anti-ovulatory activity.

3,679,665

LACTAM-N-CARBOXYLIC ACID CHLORIDES AND THEIR PRODUCTION

Hans Kiefer, Wachenheim, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Sept. 22, 1969, Ser. No. 860,025

Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 R **6 Claims**

The production of lactam-N-carboxylic acid chlorides having 5 to 13 ring members by reacting with a hydrogen halide a 1-aza-2-hydroxycycloalkene-(2)-carboxylic acid chloride-(1) which is etherified in the 2-position. Lactam-N-carboxylic acid chlorides are suitable for the production of N-substituted lactams from which the correspondingly substituted polyamides may be produced.

3,679,666

4-[4-HYDROXYPIPERIDINO]-4'-FLUOROBUTYROPHENONES

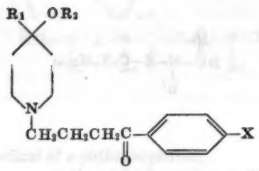
Nicholas Malatestinic, Staten Island, N.Y., and Albert Ziering, Nutley, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application July 1, 1966, Ser. No. 563,962. Divided and this application Apr. 3, 1969, Ser. No. 813,317

Int. Cl. C07d *29/20*

U.S. Cl. 260—293.8 2 Claims

Compounds of the formula



I

are described. These compounds are useful as analgesics, anti-pyretic and anti-inflammatory agents.

3,679,667

ESTERS OF 3-(2,2-TETRAMETHYLENE ETHENYL)-2,2 - DIMETHYLCYCLOPROPANECARBOXYLIC ACID

Wayne I. Fanta, Colerain Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Mar. 27, 1970, Ser. No. 23,513

Int. Cl. C07d *5/34*

U.S. Cl. 260—240 R 10 Claims

Described are esters of certain carbocyclic alcohols with 3-(2,2-tetramethylene ethenyl) - 2,2 - dimethylcyclopropanecarboxylic acid and a method for preparing same in the transisomeric form. These esters possess unique insecticidal properties and are useful as such in home, garden and agricultural applications.

3,679,668

1,2,4-TRIAZOLYL-(1)-DERIVATIVES OF THE STILBENE AND BIS-STYRYLBENZENE SERIES, PROCESS FOR THEIR MANUFACTURE AND THEIR USE AS OPTICAL BRIGHTENERS

Anton Horn, Kelkheim, Taunus, Erich Schinzel, Hofheim, Taunus, and Gunter Rosch, Altenhain, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,105

Claims priority, application Germany, Apr. 16, 1969, P 19 19 209.7; Mar. 13, 1970, P 20 11 916.8

Int. Cl. C07d *99/02*

U.S. Cl. 260—240 CA 11 Claims

1,2,4-triazolyl-(1)-derivatives of the stilbene and bis-styrylbenzene series are obtained by condensation of the corresponding phenylhydrazines with formamide. The products are useful as optical brighteners for various substrates.

3,679,669

PHENYL-1,3,4-OXDIAZOLE COMPOUNDS

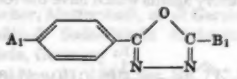
Erwin Maeder, Aesch, Basel-Land, and Adolf Emil Siegrist, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation of application Ser. No. 658,331, Aug. 4, 1967. This application Sept. 23, 1970, Ser. No. 74,873

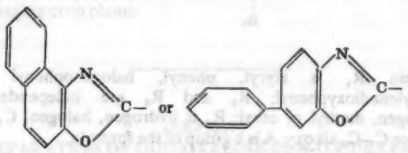
Int. Cl. C07d *85/52*

U.S. Cl. 260—240 D 11 Claims

This invention relates to new phenyl-1,3,4-oxdiazole compounds of the formula



in which A_1 is the residue



and B_1 represents a member selected from the group consisting of a phenyl, diphenylyl, naphthyl, styryl and p-phenylstyryl residue, and these residues A_1 and B_1, preferably in the terminal phenyl residues, may also contain further non-chromophoric substituents. Such compounds are valuable optical brightening agents for organic materials.

3,679,670

ARSENIC CONTAINING BISAZIDE COMPOUNDS

Nicholas J. Clecak, San Jose, and Robert J. Cox, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Nov. 26, 1971, Ser. No. 202,574

Int. Cl. C07c *117/00*

U.S. Cl. 260—240 G 3 Claims

The novel compounds bis-(p-azidophenyl) arsenic acid and p-arseno (p-azidobenzylidene) aniline have been prepared and found useful as negative photoresists which leave metallic arsenic deposited on the substrate after development.

3,679,671

OXIDATION OF PHENYLACETONITRILE DERIVATIVES EMPLOYING A COPPER (II)-AMINE CATALYST SYSTEM

Laurence I. Peterson, Framingham, Mass., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Jan. 6, 1969, Ser. No. 789,378

Int. Cl. C07d *29/32*

U.S. Cl. 260—240 D 13 Claims

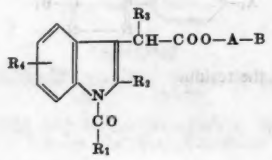
A new method of oxidizing various phenylacetonitrile derivatives employing a copper (II)-amine catalyst system; and the new 3-(amine substituted)-2-phenylacrylonitriles and 5-substituted derivatives of 3,5-diphenyl-3-pyrrolin-2-one prepared by this new method.

3,679,672
NOVEL ESTER OF 3-INDOLYLALIPHATIC ACID DERIVATIVE

Hisao Yamamoto, Nishinoyo; Tadashi Okamoto, Ashiya-shi, and Tsuyoshi Kobayashi, Minoo-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

Filed Sept. 9, 1969, Ser. No. 856,484
Claims priority, application Japan, Sept. 10, 1968, 43/65456; Sept. 10, 1968, 43/65459; Nov. 14, 1968, 43/83367; Nov. 14, 1968, 43/83368; Feb. 10, 1969, 44/9857
Int. Cl. C07d 27/56
U.S. Cl. 260—240 J 3 Claims

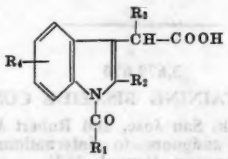
Novel 3-indolylacetate derivatives and salts thereof useful for anti-inflammatory agents which have the formula,



wherein R_1 is styryl, phenyl, halogenophenyl or methylenedioxyphenyl; R_2 and R_3 are independently hydrogen, methyl or ethyl; R_4 is hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy; A is a group of the formula,

$$-CH_2-CH_2-O-CH_2-CH_2- \text{ or } -C_nH_{2n}-$$

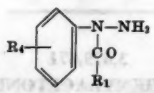
wherein n is an integer of 1–6; and B is amino, C_1–C_4 alkylamino, di C_1–C_4 alkylamino, morpholino, benzylpiperazino, piperazino, etc. The 3-indolylacetate derivatives are produced by reacting a 3-indolylacetic acid derivative of the formula,



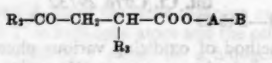
or a reactive derivative thereof with an alcohol derivative of the formula,

$$HO-A-B$$

or its reactive ester derivative, or reacting an N^1-acyl phenylhydrazine derivative of the formula,



or its salt or its hydrazone derivative with a keto ester derivative of the formula,



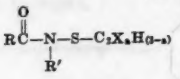
or its salt, in which formulas, R_1, R_2, R_3, R_4, A and B have the same meanings as defined above.

3,679,673
N-POLYHALOVINYLTHIOCARBOXAMIDES

Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. Nos. 810,368, March 25, 1969, abandoned, and Ser. No. 748,642, June 30, 1968, abandoned, Ser. No. 810,368, , which is a continuation-in-part of Ser. No. 748,642, , and Ser. No. 704,555, Feb. 12, 1968, abandoned, Ser. No. 748,642, , which is a continuation-in-part of Ser. No. 704,555,. This application April 30, 1970, Ser. No. 33,879
Int. Cl. C02d 41/06
U.S. Cl. 260—239.3 R 9 Claims

N-polyhalovinylthiocarboxamides of the formula:



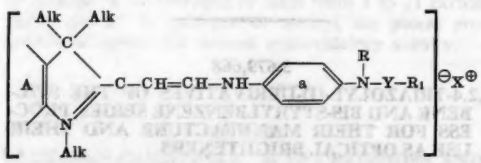
where R is an aliphatic hydrocarbon radical of one to 10 carbon atoms which has zero to about three halogen substituents of atomic number 17 to 35, R′ is hydrogen or alkyl of one to four carbon atoms with the proviso that R and R′ may be joined to form a linear alkylene radical of three to five carbon atoms which is bound to the carbonyl and nitrogen to form a ring, X is halogen of atomic number 17 to 35 and a is two or three. These carboxamides are fungicidal, algicidal and nematocidal.

3,679,674
BASIC HEMICYANINE DYESTUFFS

Herbert Friedrich, Offenbach/Main, and Gunther Trapp, Frankfurt/Main, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed June 13, 1969, Ser. No. 833,198
Claims priority, application Germany, June 20, 1968, P 17 69 631.0
Int. Cl. C07d 27/30
U.S. Cl. 260—240.8 6 Claims

Water-soluble basic dyestuffs of the formula



(I)

in which A stands for a benzene or naphthalene radical that may be substituted, ALK represents each a lower alkyl group preferably of one to four carbon atoms, R represents hydrogen or a lower alkyl radical preferably of one to four carbon atoms that may be substituted, Y represents a —CO— or $-SO_2-$ group, R_1 is an aliphatic, araliphatic, aromatic or heterocyclic radical and X^- represents an anion, and wherein the benzene nucleus a may further contain non-ionic substituents, which are suitable for the dyeing or printing of textile fibrous materials consisting of native or regenerative cellulose, silk, acetate rayon, acid-modified polyamides or polyesters, polyacrylonitrile or polyvinylidene cyanide or leather.

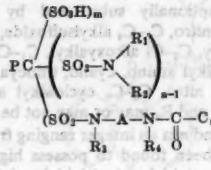
3,679,675

PHTHALOCYANINES

Hans von Tobel, Riehen/BS, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

Filed March 30, 1970, Ser. No. 23,997
Claims priority, application Switzerland, April 3, 1969, 5157/69; April 25, 1969, 6314/69
Int. Cl. C07d 27/74
U.S. Cl. 260—242 11 Claims

Dyes of the formula



wherein
PC is the radical of a phthalocyanine,
R_1 and R_2 are each H or a hydrocarbon radical or, together with N, a hetero ring,
R_3 and R_4 are each H or (substituted) alkyl or, together with A and both N atoms, a hetero ring,
R_5 is H or (substituted) alkyl,
X is a fiber-reactive radical
m is 1 to 3,
n is 1 to 3,
p is 1 or 2,
r is 1 to 5,
the sum *m*+*n*+*p* is 4 or 5,
are especially good for printing cellulosic and polyamide fibers.

3,679,676

THIADIAZABICYCLOALKANE COMPOUND

Karl Heusler, Basel, and Bruno Fechtig, Reinach-Basel-land, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 23, 1970, Ser. No. 92,231
Claims priority, application Switzerland, Nov. 27, 1969, 17673/69; June 5, 1970, 8473/70
Int. Cl. C07d 93/12
U.S. Cl. 260—243 R 1 Claim

The 4,4-dimethyl-5-thia-2,7-diazabicyclo[4.2.0]oct-2-en-8-one, which is obtained by splitting the esterified carboxyl group in a 6-amino-3-etherified hydroxycarbonylamino-2,2-dimethyl-penam compound, is useful as intermediate of compounds of the 7-amino-cephalosporanic acid type.

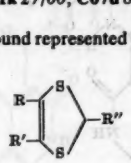
3,679,677

1,3-DITHIOL COMPOUNDS

Akira Takamizawa, Ibaraki, and Kentaro Hirai, Kyoto, both of Japan, assignors to Shionogi & Co., Ltd., Higashi-ku, Osaka, Japan

Filed Feb. 11, 1970, Ser. No. 10,620
Claims priority, application Japan, Feb. 14, 1969, 44/11165
Int. Cl. A61k 27/00; C07d 87/46, 71/00
U.S. Cl. 260—247.1 21 Claims

A 1,3-dithiol compound represented by the formula:



wherein R and R′ represent each hydrogen, lower alkyl, aryl or ar(lower)alkyl and R″ represents hydroxy, lower alkoxy, (lower)alkylthio, aryloxy, arylthio, ar(lower)alkoxy, ar(lower)alkylthio or (mono- or di-substituted)aminothiocarbonylthio, being useful as antibacterial, antifungal, anti-inflammatory, insecticidal, miticidal agents or their intermediates, is prepared from a 1,3-di-thiol-2-yliden-ammonium salt in 3 steps.

3,679,678

DIAMINO-S-TRIAZINES

Karl-Heinz Koenig; Artur Maschke, both of Ludwigshafen, and Adolf Fischer, Mutterstadt, all of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwighsafen/Rhein, Germany

Filed Nov. 21, 1968, Ser. No. 777,873
Int. Cl. C07d 55/20
U.S. Cl. 260—249.8 3 Claims

Valuable new triazine derivatives having good herbicidal properties, especially for controlling unwanted plants without damaging crop plants.

3,679,679

PREPARATION OF QUINOXALINE-DI-N-OXIDES FROM O-QUINONEDIOXIME AND BUTENE-1,4-DIONES

Beryl William Dominy, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed April 3, 1970, Ser. No. 25,544
Int. Cl. C07d 51/78
U.S. Cl. 260—250 R 8 Claims

Preparation of quinoxaline-di-N-oxides through a condensation of o-quinonedioxime and a butene-1,4-dione in a reaction-inert solvent at 20°–150° C.

3,679,680

PROCESS FOR PREPARING DISUBSTITUTED PYRAZINES

Malvin J. Michelson, Poughkeepsie, and William P. Doyle, Lagrangeville, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 3, 1969, Ser. No. 855,038
Int. Cl. C07d 51/76
U.S. Cl. 260—250 R 4 Claims

This invention concerns a one step process for preparing alkylated pyrazines comprising contacting aliphatic nitroketones under mild reducing conditions of temperature and pressure with a reducing catalyst such as Raney nickel.

3,679,681

DIGLYCIDYL ETHERS

Juergen Habermeier, Allschwil; Hans Batzer, Arlesheim, and Daniel Porret, Binningen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jan. 7, 1970, Ser. No. 1,289
Claims priority, application Switzerland, Jan. 24, 1969, 1104/69
Int. Cl. C07d 49/32, 51/42
U.S. Cl. 260—256.4 C 9 Claims

New diglycidyl ethers of binuclear, five-membered or six-membered, unsubstituted or substituted, oxyalkylated N-

hetero-cyclic compounds, which contain two NH groups in the molecule, by reaction of binuclear, five-membered or six-membered, unsubstituted or substituted, N-heterocyclic compounds, such as bis-(hydantoin) or bis-(dihydrouracil) compounds, for example 1,1'-methylene-bis-(5,5-dimethylhydantoin), bis-(5,5-dimethylhydantoinyl-3)-methane or 1,1'-methylene-bis-(5,6-dihydrouracil) with ethylene oxide, for example ethylene oxide or propylene oxide, to give the corresponding monohydroxy or dihydroxy compounds, and subsequent glycidylation of the OH groups or of the OH group and the NH group to give the corresponding glycidyl ethers. The new diglycidyl ethers can be crosslinked by means the usual curing agents for epoxides to form insoluble and infusible products with good mechanical properties.

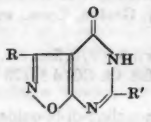
3,679,682

CERTAIN 5H-ISOXAZOLO[5,4-D]PYRIMIDIN-4-ONES

Loren K. Gibbons, Medina, N.Y., assignor to FMC Corporation, New York, N.Y.

Filed April 23, 1970, Ser. No. 31,414
Int. Cl. C07d *99/04*
U.S. Cl. 260—256.4 F **13 Claims**

Outstanding herbicidal activity is exhibited by the respective members of the group of new isoxazolopyrimidines that are included within the general formula:



wherein R and R', which may be the same or different, are each members of the group consisting of lower (one to four carbon atoms)—aliphatic, lower (three to six carbon atoms)—cycloaliphatic and trifluoromethyl radicals;
and the metallic and amine salts thereof.

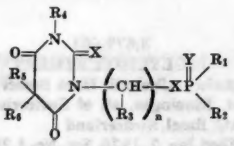
3,679,683

BARBITURATE 3-N-METHYLENE PHOSPHATES

Martin L. Gorbaty, Elizabeth, N.J., assignor to Esso Research and Engineering Company

Filed May 11, 1970, Ser. No. 36,430
Int. Cl. C07d *51/20, 51/24*
U.S. Cl. 260—257 **16 Claims**

Barbiturate phosphates characterized by the following structural formula:



wherein R_1 and R_2 are each selected from the group consisting of C_1–C_6 alkoxy, C_1–C_6 thioalkyl, C_1–C_6 alkyl, C_3–C_6 alkoxyalkyl, phenyl, phenoxy, thiophenyl, wherein said groups can be optionally substituted with chlorine, bromine, nitrile or nitro; R_1 and R_2 may or may not be the same; R_3 is one selected from the group consisting of hydrogen, C_1–C_6 alkyl, optionally substituted with chlorine or bromine; R_4 is one selected from the group consisting of hydrogen, C_1–C_6 alkyl, optionally substituted with chlorine or bromine, phenyl, bromo or chloro-substituted phenyl, C_1–C_4 alkylamino, C_2–C_4 dialkylamino, C_2–C_4 acyl, C_1–C_4 thioalkyl, C_1–C_4 alkylsulfoxide, C_1–C_4 alkylsulfone, C_2–C_4 alkoxyalkyl, C_3–C_6 alkenyl, C_3–C_6 alkynyl; R_5 and R_6 are each selected from the group consisting of C_1–C_6 alkyl, phenyl, C_1–C_6 chloro or bromo-substituted alkyl, C_1–C_4 alkylthio, thiophenyl optionally substituted by chlorine, bromine, C_1–C_4 alkyl or nitro, C_1–C_4 alkylsulfoxide, C_1–C_4 alkylsulfonyl, C_1–C_4 alkoxy, C_2–C_5 alkoxyalkyl, C_1–C_6 monoalkylamino and C_2–C_6 dialkyl amino, cyano, thiocyano, C_3–C_6 alkenyl, C_3–C_6 alkynyl, nitro, C_3–C_6 cycloalkyl and C_5–C_6 cycloalkenyl wherein R_5 and R_6 may or may not be the same; X and Y can be 0 or S; and *n* is an integer ranging from 1 to 3. Such compounds have been found to possess highly active contact and systemic insecticidal and miticidal activity.

3,679,684

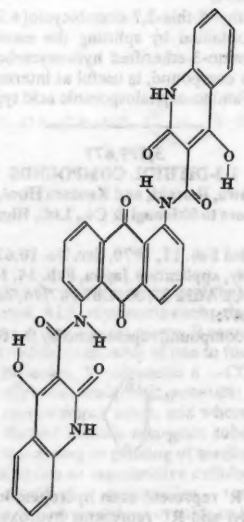
YELLOW PIGMENTS

Pritam Singh Dhaliwal, Belleville, and Edward E. Jaffe, Union, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

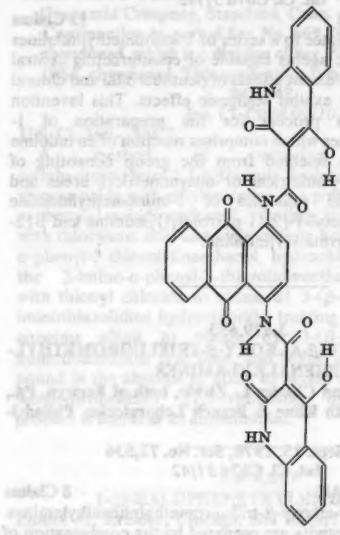
Filed April 17, 1969, Ser. No. 817,187
Int. Cl. C07d *33/56*
U.S. Cl. 260—272 **7 Claims**

Yellow pigments are produced by reacting a 3-alkoxy-carbonyl-2,4-dihydroxyquinoline, such as 3-ethoxycarbonyl-2,4-dihydroxyquinoline, and a diaminoanthraquinone, such as 1,5-diaminoanthraquinone, 1,4-diaminoanthraquinone, or 1,1-diamino-4,4'-dianthraquinonyl. Typical compounds of this invention are:

1,5-Bis(2,4-dihydroxyquinoline-3-carboxamido)anthraquinone which may be represented by the following structural formula

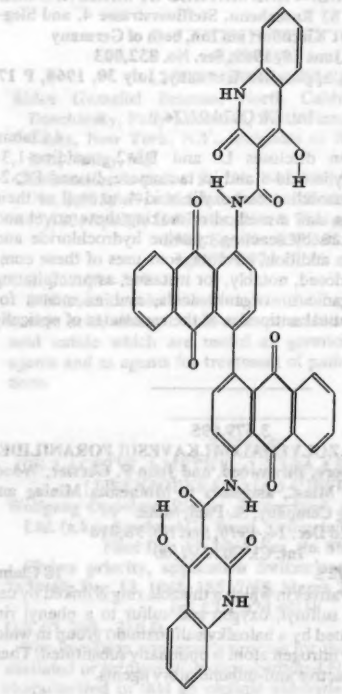


1,4-bis(2,4-dihydroxyquinoline-3-carboxamido)anthraquinone which may be represented by the following structural formula



and

1,1'-bis(2,4-dihydroxyquinoline-3-carboxamide)4,4'-dianthraquinonyl which may be represented by the following structural formula



3,679,685

ESTERS OF 2-(β-CARBOXYETHYL)AMINO-3,4-PHTHALOYLHENZACRIDONE

Paul Buecheler, Reinach/Basel-Land, and Fred Mueller, Muchenstein/Basel-Land, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 578,121, Sept. 9, 1966, abandoned. This application Feb. 12, 1970, Ser. No. 10,992

Claims priority, application Switzerland, Sept. 15, 1965, 12819/65

Int. Cl. C07d *39/00*

U.S. Cl. 260—276 **12 Claims**

Phthaloylbenzacridone disperse dyes, having an alkoxycarbonyl-alkylamino-substituent in an ortho-position, are suitable for dyeing, padding and printing fiber or filaments of hydrophobic, synthetic or semi-synthetic, high molecular organic substances.

3,679,686

N-(BICYCLOAMINO-ALKANOYL)-ANILINES

Hubert Karel Frans Hermans, Beerse; Alfonsus Gillielmus Knaeps, Herentals, and Joannes Josephus Maria Willems, Turnhout, all of Belgium, assignors to Janssen Pharmaceutica N.V.

Filed Sept. 9, 1970, Ser. No. 70,878

Int. Cl. C07d *33/06, 39/00*

U.S. Cl. 260—287 R **15 Claims**

Compounds of the class of N-(bicycloamino-alkanoyl)-anilines useful as local anesthetic and anti-arrhythmic agents.

3,679,687

DERIVATIVES OF 4-[2-(CARBOCYCLOALKOXYMETHYL) PHENYLIMINO]-1,4-DIHYDROQUINOLINES

Jan W. F. Wasley, Ossining, and Norbert Gruenfeld, Bronx, both of N.Y., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

Continuation-in-part of Ser. No. 827,998, May 26, 1969, abandoned, which is a continuation-in-part of Ser. No. 694,411, Dec. 29, 1967, abandoned. This application Sept. 11, 1970, Ser. No. 72,875

Int. Cl. C07d *33/12*

U.S. Cl. 260—287 R **13 Claims**

4-[2-(Carbocycloalkoxymethyl)phenylimino]-1,4-dihydroquinolines bearing a chloro or trifluoromethyl group in the 7-position of the quinoline nucleus are anti-inflammatory and anti-malarial agents and can be prepared through treatment of a cycloalkyl 2-aminophenylacetate with the appropriate 4-chloroquinoline. A typical embodiment is 7-chloro-4-[2-(carbocyclohexyloxymethyl)phenylimino]-1,4-dihydroquinoline.

3,679,688

PREPARATION OF SUBSTITUTED PYRIDINES

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 637,891, May 12, 1967, abandoned. This application April 23, 1970, Ser. No. 31,371

Int. Cl. C07d *31/06*

U.S. Cl. 260—290 P **13 Claims**

Substituted pyridines are prepared by reacting an ethylenically unsaturated hydrocarbon, carbon monoxide, hydrogen and ammonia in a liquid medium containing a Group VIII noble metal catalyst in complex association with a biphyllic ligand at a temperature of 50° to 400° C. and a pressure of 5 to 300 atmospheres. A typical process comprises contacting ethylene, carbon monoxide and hydrogen with a liquid reaction medium containing ammonium hydroxide, rhodium trichloride and triphenylphosphine to produce 3,5-dimethyl, 2-ethyl pyridine.

3,679,689

PREPARATION OF SUBSTITUTED PYRIDINES

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 655,750, July 25, 1967, abandoned. This application July 6, 1970, Ser. No. 52,702
Int. Cl. C07d 29/40
U.S. Cl. 260—290 H 18 Claims

Substituted pyridines are prepared by reacting an ethylenically unsaturated hydrocarbon, carbon monoxide, water and ammonia in a liquid medium containing a Group VIII noble metal catalyst in complex association with a biphyllic ligand or an aromatic heterocyclic amine at a temperature of 50° to 400° C and a pressure of 5 to 300 atmospheres. A typical process comprises contacting ethylene, carbon monoxide and water with a liquid reaction medium containing rhodium trichloride and triphenylphosphine to produce dihydrodimethylethylpyridine.

3,679,690

CERTAIN N-(PYRIDYL) PROPIONANILIDES

Philip M. Carabateas, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 758,924, Sept. 9, 1968, Pat. No. 3,658,675. This application March 18, 1971, Ser. No. 125,879
Int. Cl. C07d 31/44
U.S. Cl. 260—295 AM 4 Claims

An N-[1-Z-4(or 3)-piperidyl]acylanilide, having antidiarrheal utility, is prepared by reacting an N-[4(or 3)-piperidyl]acylanilide with a Z-halide or by reacting a 4(or 3)-(Q-anilino)-1-Z-piperidine with an acyl halide or anhydride, where Z is lower-alkyl, 3-cyano-3,3-diphenylpropyl or 2-cyanoethyl, acyl is propionyl, lactyl, dichloroacetyl or carbethoxy, and Q is hydrogen or (halo)$_n$ where halo is fluoro or chloro and n is 1 or 2. Also included are corresponding N-[4(or 3)-pyridyl]-, N-(3-quinuclidinyl)-, and N-(8-Z-3-nortropanyl)-acylanilides.

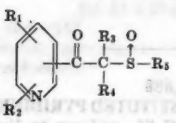
3,679,691

PYRIDYL β-KETOSULFOXIDES AND SULFONES

Glenn C. Morrison, Dover, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 773,941, Nov. 6, 1968, abandoned. This application May 21, 1970, Ser. No. 39,557
Int. Cl. C07d 31/50
U.S. Cl. 260—294.8 F 21 Claims

The present invention relates to pyridyl β-ketosulfoxides and sulfones. These compounds may be represented by the following structural formulas:



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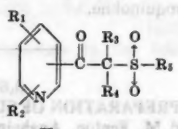


II

wherein R_1 and R_2 may be hydrogen, lower alkyl, cycloalkyl, lower alkenyl, aryl, substituted aryl, aralkyl, substituted aralkyl, heterocyclic, substituted heterocyclic, acyl, halogen, lower alkoxy, nitro, mercapto, lower alkylthio, hydroxy, amino, lower alkylamino, dilower alkylamino and the like. R_3 and R_4 may be hydrogen, lower alkyl or aryl. R_5 may be alkyl of up to 12 carbon atoms, aryl, substituted aryl, heterocyclic or substituted heterocyclic. They are prepared by reacting an ester of the pyridine carboxylic acid with dimethylsulfoxide or dimethylsulfone in the presence of a strong base. These compounds are useful as immunosuppressive agents.

3,679,692

IMINOMETHYLINDOLINES

Yao Hua Wu, and Walter G. Lobeck, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Oct. 1, 1969, Ser. No. 862,915
Int. Cl. C07d 31/42
U.S. Cl. 260—296 B 12 Claims

This invention relates to a series of 1-iminomethylindolines which are analeptic agents capable of counteracting central nervous system depressant effects of pentobarbital and chloral hydrate. They also exhibit analgesic effects. This invention also relates to a process for the preparation of 1-iminomethylindolines which comprises reaction of an indoline with carboxamides selected from the group consisting of amides, lactams, symmetrical or unsymmetrical ureas and hydrazides. Typical examples of 1-iminomethylindoline derivatives are 5-acetyl-1-[2-(1-pyrrolinyl)]indoline and 1-[2-(5,5-dimethyl-1-pyrrolinyl)]indoline.

3,679,693

N-PYRIDYLALKYL-β-ALKOXY-β-TRIFLUOROMETHYL-PHENALKYLAMINES

Stephen T. Ross, and Charles L. Zirkle, both of Berwyn, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed Sept. 15, 1970, Ser. No. 72,536
Int. Cl. C07d 31/42
U.S. Cl. 260—296 AE 8 Claims

N-Pyridylalkyl-β-alkoxy-β-trifluoromethylphenalkylamines having anorectic activity are prepared by the condensation of an Nepyridylalkylamine with a β-alkoxytrifluoromethylphenalkyl halide.

3,679,694

L-AND DL-2-GUANIDINO-1,3-THIAZOLINE CARBOXYLIC ACID-4 AND METHOD OF MAKING SAME

Paul Rambacher, 82 Rosenheim, Steffinerstrasse 4, and Siegfried Make, 8201 Kirchdorf am Inn, both of Germany

Filed June 10, 1969, Ser. No. 832,003
Claims priority, application Germany, July 30, 1968, P 17 95 021.9
Int. Cl. C07d 91/24
U.S. Cl. 260—299 4 Claims

The application discloses L- and DL-2-guanidino-1,3-thiazoline carboxylic acid-4 and its tautomere, L- and DL-2-guanidino-1,3-thiazolidine carboxylic acid-4, as well as their basic copper salts, and a method of making these novel and useful compositions by reacting cysteine hydrochloride and dicyandiamide. In addition, advantageous uses of these compositions are disclosed, notably, for instance, as precipitating agents for inorganic or organic acids, and as means for separating the optical antipodes of the racemates of optically active acids.

3,679,695

CERTAIN THIAZOLYLHALOALKAVESULFORANILIDES

George G. I. Moore, Birchwood, and John F. Gerster, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 14, 1970, Ser. No. 98,010
Int. Cl. C07d 91/00
U.S. Cl. 260—302 S 18 Claims

Thiazole derivatives in which a thiazole ring is linked by carbonyl, sulfonyl, sulfinyl, oxygen and sulfur to a phenyl ring which is substituted by a haloalkylsulfonamido group in which the sulfonamido nitrogen atom is optionally substituted. These compounds are active anti-inflammatory agents.

3,679,696

METHOD OF PREPARING D1 6-PHENYL-2,3,5,6-TETRAHYDROIMIDAZO [2,1-B]-THIAZOLE HYDROCHLORIDE

Milon Walker Bullock, Hopewell, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 669,704, Sept. 22, 1967, abandoned, which is a division of Ser. No. 493,231, Oct. 5, 1965, abandoned. This application July 22, 1969, Ser. No. 843,847

Int. Cl. C07d *99/10*

U.S. Cl. 260—306.7 4 Claims

A method of preparing 6-phenyl-2,3,5,6-tetrahydroimidazo[2,1-b]thiazole hydrochloride by reacting styrene oxide with ethyleneimine in a polar solvent to produce α-phenyl-1-aziridineethanol, treating this reaction product with thiocyanic acid and hydrochloric acid to obtain 2-imino-α-phenyl-3-thiazolidineethanol hydrochloride and reacting the 2-imino-α-phenyl-3-thiazolidineethanol hydrochloride with thionyl chloride to obtain d1 3-(β-chlorophenethyl)-2-iminothiazolidine hydrochloride, treating this compound with aqueous alkali to obtain d1 3-(β-chlorophenethyl)-2-iminothiazolidine free base, and isomerizing the latter compound in the absence of alkali to obtain d1 6-phenyl-2,3,5,6-tetrahydroimidazo [2,1-b]thiazole hydrochloride. The product is useful as an anthelmintic.

3,679,697

1-(β-HALOPHENETHYL)IMIDAZOLES

Eunice M. Kreider, Chicago, and Robert C. Tweit, Wilmette, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Oct. 8, 1970, Ser. No. 79,259

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 11 Claims

Preparation of the captioned compounds — for example, 1-(β-chloro-4-nitrophenethyl)imidazole oxalate — and their valuable biological properties — including antiulcerogenic, antibacterial, antiprotozoal, antifungal, antialgal, and antigerminant activities — are disclosed.

3,679,698

2-NITROIMIDAZOLES

Alden Gamaliel Beaman, North Caldwell, N.J.; Robert Duschinsky, Pully-Lausanne, Switzerland, and William Paul Tautz, New York, N.Y., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 543,066, April 18, 1966, Pat. No. 3,505,349, which is a continuation-in-part of Ser. No. 447,103, April 9, 1965, abandoned. This application Sept. 12, 1969, Ser. No. 857,556

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 16 Claims

2-Nitroimidazoles substituted in the 1-position with an alkanoic acid, alkanoic acid ester or an N-substituted alkanoic acid amide which are useful as germicides, antiprotozoal agents and as agents for treatment of pathogenic yeast infections.

3,679,699

CIS-2-ACETYL-1-METHYL-1,2,3,3A,4,9B-HEXAHYDRO [1]BENZOPYRANO [4,3-C]PYRAZOLE

Wolfgang Oppolzer, Riehen, Switzerland, assignor to Sandoz Ltd. (a.k.a. Sandoz AG), Basel, Switzerland

Filed Dec. 11, 1969, Ser. No. 884,313

Claims priority, application Switzerland, May 22, 1968, 7659/68; Dec. 12, 1968, 18517/68; March 25, 1969, 4471/69

Int. Cl. C07d *49/18*

U.S. Cl. 260—310 D 1 Claim

The invention concerns a process for the production of an anellated or bridged N'-monosubstituted N-acyl pyrazolidine, characterized in that an olefinic aldehyde component comprising an olefinic aldehyde, or one of its reactive functional derivatives having its olefinic C/C double bond separated from the aldehyde by three to five atoms, of which one or two members may be contained in the same ring, and a hydrazine component comprising an N'-monosubstituted N-acl hydrazine, are reacted together with the removal of water.

The invention furthermore extends to various compounds which may be produced by the process. The invention allows for production of a large class of novel pharmacologically active compounds.

3,679,700

PREPARATION OF N-VINYL CARBAZOLE

Stanley Robert Sandler, Springfield, Pa., assignor to Borden Inc., New York, N.Y.

Filed May 13, 1970, Ser. No. 37,063

Int. Cl. C07d *27/68*

U.S. Cl. 260—315 12 Claims

A method for preparing an intermediate hydrolyzable to N-vinyl carbazole comprises passing acetylene into a substantially anhydrous liquid mixture of an alkali-metal carbazole in an inert reaction medium selected from the group consisting of N-methyl-2-pyrrolidone, N,N-dimethylacetamide and dimethyl sulfoxide, said mixture containing at least 10 percent by weight of said metal carbazole. The new method is operable at atmospheric pressure, thus avoiding the hazards entailed in high-pressure acetylene systems.

3,679,701

7-BENZOYL INDOLINES

Jackson B. Hester, Jr., 6126 Devon, Portage, Mich.

Division of Ser. No. 873,718, Nov. 3, 1969, Pat. No. 3,579,503. This application Dec. 4, 1970, Ser. No. 95,338

Int. Cl. C07d *27/38*

U.S. Cl. 260—326.11 12 Claims

1,2-Dihydro-7-phenylpyrrolo[3,2,1-jk][1,4]benzodiazepin-4(5H)-ones; 6,7-dihydro-7-phenylpyrrolo[3,2,1-jk][1,4]benzodiazepin-4(5H)-ones; 7-phenylpyrrolo[3,2,1-jk][1,4]benzodiazepin-4(5H)-ones; 1,2-dihydro-6-phenylpyrrolo[1,2,3-ef][1,5]benzodiazepin-4(5H)-ones; 1,2-dihydro-4-phenylpyrrolo[1,2,3-ef][1,5]-benzodiazepin-6(7H)-ones and 1,2,4,5-tetrahydro-4-phenylpyrrolo-[1,2,3-ef][1,5]benzodiazepin-6(7H)-ones, processes for preparing the same and novel intermediates prepared by said processes. The novel compounds of this invention exhibit tranquilizing and anticonvulsant activity in animals.

3,679,702

1-[2-AMINO-A-(3-INDOLYL PHENETHYL]-2-PYRROLIDINONE

Yao Hua Wu, and Richard P. Ryan, Jr., both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed March 12, 1971, Ser. No. 123,852

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.14 R 3 Claims

1-[2-Amino-α-(3-indolyl)phenethyl]-2-pyrrolidinone is a new synthetic compound having pharmacological value as a diuretic agent and as a chemical intermediate in the preparation of other diuretics and azo dyestuffs. This substance is prepared by basic hydrolysis of 2,3,5,6-tetrahydro-5-(indol-3-yl)-1H-pyrrolo[2,1-b][1,3]benzodiazepine.

3,679,703

SAND CORE AND MOLD COMPOSITIONS CONTAINING GLYCERINE AND AN AMMONIUM SALT

James A. Conrady, Amherst, and John S. Fitzpatrick, Lorain, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 16, 1970, Ser. No. 81,562
Int. Cl. C08f 45/28, 45/56, 45/58
U.S. Cl. 260—334 R 7 Claims

Dielectric baked sand cores and molds containing amine salts of copolymers of acrylonitrile and acrylic acid have improved resistance to humidity when these compositions also contain small amounts of an ammonium salt and glycerine.

3,679,704

PREPARATION OF DIBENZODIOXINS

George R. Lester, Park Ridge, and John F. Brennan, Des Plaines, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Del.

Filed Aug. 7, 1969, Ser. No. 848,359
Int. Cl. C07d 15/20
U.S. Cl. 260—340.3 10 Claims

Dibenzodioxins are prepared by reacting phenol with a palladium halide in the presence of a catalyst comprising a copper halide, said reaction being effected in a sodium acetate-acetic acid medium at refluxing conditions.

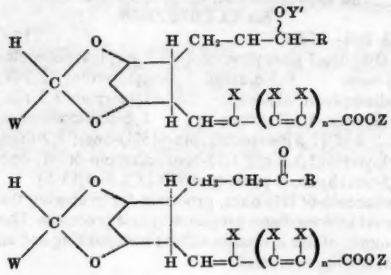
3,679,705

PROCESS FOR MAKING PROSTAGLANDINS AND COMPOUNDS RELATED TO PROSTAGLANDINS

John C. Babcock, and Philip F. Beal, III, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 517,442, Dec. 29, 1965, Pat. No. 3,505,386. This application April 6, 1970, Ser. No. 31,066
Int. Cl. C07d 15/00
U.S. Cl. 260—340.7 10 Claims

The preparation of compounds of the following formulas is disclosed:



In these formulas, R is alkyl, W is hydrogen, alkyl, haloalkyl, phenyl, or phenyl substituted with halo, nitro, or carbomethoxy, X is hydrogen or methyl, Y' is hydrogen or carboxyacyl, Z is hydrogen or alkyl, and *n* is zero, one, or two. These compounds are used as intermediates to make prostaglandins of the dihydro-$PGF_{1\alpha}$-type.

3,679,706

POLYMERIZATION INHIBITORS FOR ε-CAPROLACTONES

Hubert H. Thigpen, and Charles C. Hobbs, both of c/o Celanese Corporation, Corpus Christi, Tex.

Filed April 6, 1970, Ser. No. 26,049
Int. Cl. C07d 9/00
U.S. Cl. 260—343 8 Claims

Disclosed herein is a process for inhibiting the production of polymeric ε-caprolactones in the oxidation of cyclohexanones to produce monomeric ε-caprolactones. The cyclohexanones are reacted with a suitable oxidizing agent such as peracetic acid in the presence of certain polymerization inhibitors such as isocyanates.

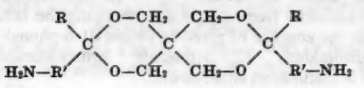
3,679,707

CURING AGENT FOR EPOXY RESINS

Ippei Yoshimura, Tokyo; Norihiko Fukue; Hiroshi Sakamoto, both of Kawasaki-shi; Hisashi Murofushi, Tokyo; Takami Hiyama, and Takao Matsunaga, both of Yokohama-shi, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 560,067, June 24, 1966, abandoned. This application Nov. 26, 1969, Ser. No. 880,356
Claims priority, application Japan, June 26, 1965, 40/38175; Feb. 9, 1966, 41/7496
Int. Cl. C07d 15/04
U.S. Cl. 260—340.7 2 Claims

Epoxides and acrylonitrile react with spiroacetal diamines of the formula



to form a viscous liquid which is a good hardener for epoxy resin intermediates, in the formula R being hydrogen, methyl, or ethyl, and R' being alkyl having one to six carbon atoms. Epoxy resins cured by means of the hardener are flexible, colorless and transparent.

3,679,708

PEROXIDES BEARING GAMMA-LACTONE RING AND METHOD OF MAKING THE SAME

Yun Ger Chang, Austin, Tex., assignor to Reichhold Chemicals, Inc., White Plains

Filed March 9, 1971, Ser. No. 122,549
Int. Cl. C07d 5/06
U.S. Cl. 260—343.6 6 Claims

New peroxides containing the gamma-lactone ring are prepared by reacting alpha-acetyl-gamma-butyrolactone or alpha-acetyl-alpha-methyl-gamma-butyrolactone with a monofunctional hydroperoxide in the presence of an acidic catalyst at a temperature ranging from about −10° C. to about 100° C. with a preferred temperature of from about 10° C. to about 30° C. The mole ratio of the reactants may vary from about 1:2 to about 1:4 and the preferred mole ratio may range from about 1:2.0 to about 1:2.2. Peroxides of this invention are highly efficient polymerization initiators and crosslinking agents.

3,679,709

PREPARATION OF OCTAFLUOROTETRAHYDROFURAN

Hughie R. Frick, and Richard W. Anderson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 6, 1970, Ser. No. 52,757
Int. Cl. C07d 5/04
U.S. Cl. 346.1 R 6 Claims

Disclosed is a process for the preparation of octafluorotetrahydrofuran. The process involves reacting perfluoroglutaryl fluoride with fluorine in the presence of KF, CsF, AgF or RbF as catalyst. The reaction is carried out at a temperature within the range of from about −196° to 25° C.

3,679,710

METHOD OF ISOMERIZING 4-CYCLO-HEXENE-1,2-DICARBOXYLIC ACID ANHYDRIDES

Wolfgang C. Forster, Middletown, N.Y., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

Filed May 18, 1970, Ser. No. 38,480
Int. Cl. C07c 61/24
U.S. Cl. 260—346.3 2 Claims

A method for preparing liquid mixtures of isomers of both the cis and trans forms of 4-cyclohexene-1,2-dicarboxylic anhydride and its nuclear alkyl derivatives and resulting product. These liquid mixtures are prepared by isomerizing the anhydride with a catalyst consisting of boric acid and oxalic acid, at temperatures between about 65° C. and about 185° C. This procedure permits the use of mild reaction conditions and yields a product having improved color, less by-products and low viscosity as compared to products prepared by heretofore known methods.

3,679,711

METHOD OF PREPARING (CIS-1,2-EPOXYPROPYL)PHOSPHONIC ACID ESTERS

Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 27, 1969, Ser. No. 794,385
Int. Cl. C07f 9/40
U.S. Cl. 260—348 R 3 Claims

A method for the preparation of (cis-1,2-epoxypropyl)-phosphonic acid and its salts and ester derivatives which comprises treating a propionaldehyde substituted in the 2-position by a leaving group with: (1) an alkali metal dihydrocarbylphosphite, (2) a trihydrocarbylphosphite or (3) a di-alkali metal phosphite. Suitable leaving groups include halogen, alkarylsufonyloxy, alkanesulfonyloxy or a sulfonium, sulfoxonium, ammonium or phosphonium cation. The (cis-1,2-epoxypropyl)phosphonic acid product thus obtained and its salts are antibiotics which have utility as antibacterials in inhibiting the growth of gram-negative and gram-positive pathogenic bacteria.

3,679,712

METHOD FOR THE PREPARATION OF (CIS-1,2-EPOXYPROPYL)PHOSPHONIC ACID DERIVATIVES

Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 29, 1969, Ser. No. 795,041
Int. Cl. C07f 9/38, 9/40, 9/44
U.S. Cl. 260—348 R 5 Claims

A method for the preparation of (±) and (−) (cis-1,2-epoxypropyl)phosphonic acid and its salt, amide and ester derivatives via the reaction of a 2-oxy substituted n-propylphosphonate or diamide analog with a reagent capable of effecting ring closure. The (±) and (−) (cis-1,2-epoxypropyl)phosphonic acid product thus obtained and its salts are antimicrobial agents which are useful in inhibiting the growth of gram-positive and gram-negative pathogenic bacteria.

3,679,713

RECOVERY AND PURIFICATION OF BASIC TRIARYLMETHANE DYES

Martin Louis Feldman, East Brunswick, and John Edson Gordon, Martinsville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 20, 1970, Ser. No. 4,413
Int. Cl. C09b 11/14
U.S. Cl. 260—388 9 Claims

Basic triarylmethane dyes such as Malachite Green (C.I.42,000), Crystal Violet (C.I. 42,555) and Victoria Blue B (C.I. 44,045) are obtained in a purified or more concentrated condition from aqueous dispersions thereof by reacting the salt form of the dye with an inorganic base in the presence of a nonpolar solvent, thereby extracting the dye base into the solvent as it is formed, followed by separating the dye base solution from the aqueous phase and acidifying it to form the triarylmethane dye.

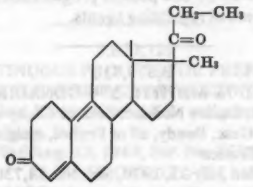
3,679,714

17α,21-DIMETHYL-19-NOR-Δ^{4,9}-PREGNADIENE-3,20-DIONE AND PROCESS THEREFOR

Julien Warnant, Neuilly Sur-Seine, and Andre Farcilli, Rosny-Sous-Bois, both of France, assignors to Uclaf Roussel, Paris, France

Filed Feb. 3, 1971, Ser. No. 112,387
Claims priority, application France, Feb. 20, 1970, 7006179
Int. Cl. C07c 169/34
U.S. Cl. 260—397.3 2 Claims

17α,21-dimethyl-19-nor-Δ^{4,9}-pregnadiene-3,20-dione of the formula



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having antigonado-hypophsial, progestomimetic and progestative activity and its preparation.

3,679,715

PROCESS FOR THE SELECTIVE REDUCTION OF 6-METHYLENE-3-KETO-Δ^4-STEROIDS

John M. Beaton; Verlan H. Van Rheenen, both of Portage, and Jekishan R. Parikh, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 16, 1970, Ser. No. 81,544
Int. Cl. C07c 169/36
U.S. Cl. 260—397.1 14 Claims

A novel process for the selective reduction of 6-methylene-3-keto-Δ^4-steroids with a palladium catalyst to obtain the corresponding 6-methyl-3-keto-Δ^5-steroid which is isomerized in the presence of an acid or a base to obtain the desired 6α-methyl-3-keto-Δ^4-steroid.

An important characteristic of many pharmacologically active steroids is the presence of a methyl substituent at the 6α-position. The process of this invention provides a useful method for obtaining these novel compounds.

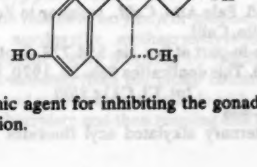
3,679,716

3, 16α, 17α-TRIHYDROXY-Δ$^{1,3,5(10)}$ OESTRATRIENE

Georg Anner, and Jaroslav Kalvoda, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 11, 1970, Ser. No. 10,647
Claims priority, application Switzerland, Feb. 27, 1969, 2963/69
Int. Cl. C07c 169/08
U.S. Cl. 260—397.5 1 Claim

The compound of the formula



Use: Oestrogenic agent for inhibiting the gonadotropic function and ovulation.

3,679,717

STEROID COMPOUNDS AND PROCESS

Glen E. Arth, Cranford, and Gary H. Rasmusson, Watchung, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 13, 1970, Ser. No. 11,332
Int. Cl. C07c *169/32*
U.S. Cl. 260—397.45 5 Claims

The invention disclosed herein relates to 3,11β-dihydroxy-9α-fluoro-16α-methyl-17α-acyloxy-pregn-4-en-20-one, and to 3-ester and 3-ether derivatives thereof; more particularly it relates to certain preferred embodiments, namely to the specific compounds 3-methoxy (or acetoxy)-9α-fluoro-11β-hydroxy-16α-methyl-17α-acetoxy-pregn-4-en-20-one. These compounds are prepared by reacting the corresponding 3-ketone with an alkali metal borohydride thereby forming the corresponding 3-hydroxy derivative, and reacting the latter with an appropriate etherifying or acylating agent. These 3-esters and 3-ethers of 3,11β-dihydroxy-9α-fluoro-16α-methyl-17α-acyloxy-pregn-4-en-20-one possess progestational activity and are valuable as estrus regulating agents.

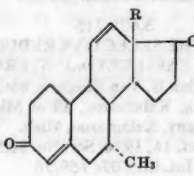
3,679,718

NOVEL 7α-METHYL-$\Delta^{4,11}$-GONADIENES

Robert Bucourt; Lucien Nedelec, both of Clichy-sous-Bois, and Jean-Claude Gasc, Bondy, all of France, assignors to Roussel Uclaf, Paris, France

Filed July 27, 1970, Ser. No. 58,730
Claims priority, application France, July 28, 1969, 6925701
Int. Cl. C07c *169/22*
U.S. Cl. 260—397.45 4 Claims

Novel 7α-methyl-$\Delta^{4,11}$-gonadiene of the formula



I

wherein R is alkyl of one to four carbon atoms and R′ is selected from the group consisting of hydrogen, acyl of an organic carboxylic acid of one to 18 carbon atoms and an organic ether radical which have anabolic and androgenic activities and their preparation.

3,679,719

NON-YELLOWING SOFTENING AGENT FOR COTTON AND RAYON TEXTILES

James Marvin Brown, Charlotte, N.C., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 576,849, Sept. 2, 1966, abandoned. This application March 12, 1970, Ser. No. 19,066
Int. Cl. C07c *143/90*; C11d *1/28*
U.S. Cl. 260—400 3 Claims

Process for producing a novel composition of the class normally employed as softening agents for cotton and rayon textiles during hot finishing treatments, and storage of the composition. More particularly, the invention relates to the alkali metal salts of sulfonated bisfumarates of the mixed glycerides of unsaturated fatty acids, having at least 15 percent by weight of polyunsaturated fatty acids therein.

3,679,720

ACYL FLUORIDES

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 854,778, Sept. 2, 1969, Pat. No. 3,649,590. This application Feb. 26, 1970, Ser. No. 14,660
Int. Cl. C11c *3/00*
U.S. Cl. 260—408 20 Claims

Novel quaternary alkylated acyl fluorides prepared from acyl chloride or bromide by reaction with anhydrous fluoride useful as insect control agents.

3,679,721

TITANIUM COMPOUNDS

David Whiteley Brook, Teesside, and Raymond Ward, Coxhoe, both of England, assignors to British Titan Products Company Limited, Durham, England

Filed March 9, 1970, Ser. No. 17,939
Claims priority, application Great Britain, March 18, 1969, 14,048/69
Int. Cl. C07f *7/28*
U.S. Cl. 260—429.5 6 Claims

A titanium chelate which is the reaction product of either ethylene glycol, propylene glycol or diethylene glycol or of mixtures thereof with monoethanolamine and a titanium orthoester. The chelate is of use in producing stable suspensions of titanium dioxide in water.

3,679,722

METAL-COBALT CARBONYL COMPLEXES

James H. Tsai, Sarnia, Ontario, and Glenn H. Anderson, Corunna, Ontario, both of Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed June 22, 1970, Ser. No. 48,486
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 8 Claims

Complexes of metal-cobalt carbonyl moiety represented by the empirical formula, $X_{y-n}(A)_yM[Co(CO)_4]_n$, wherein, for example, X is bromine, A is tetrahydrofuran, M is tin, y is 4, z is an average number of 0.5 to 1, and *n* is 2 are provided by reacting lower metal halide such as tin dibromide with octacarbonyldicobalt in the presence of tetrahydrofuran. The complexes are useful catalysts in the polymerization of olefins such as norbornadiene.

3,679,723

CONDENSATION PRODUCTS OF ALUMINUM HYDROXIDE AND AN ALUMINUM ALCOHOLATE

Hideo Tomomatsu, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Division of Ser. No. 821,944, May 5, 1969, Pat. No. 3,542,750. This application Dec. 22, 1969, Ser. No. 889,862
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 AD 5 Claims

The condensation products of aluminum hydroxide and an aluminum alcoholate are catalysts for the polymerization of cyclic alkylene oxides. These condensation products are useful alone or in combination with an organometallic compound as a catalyst for the high molecular weight polymerization of cyclic alkylene oxides. High molecular weight polymerized cyclic alkylene oxides are useful as thickeners, water friction reducers, adhesives, cosmetics, and elastomers.

3,679,724

DIALKALI SALTS OF ORTHOSILICIC ACID DIESTERS AND THEIR PREPARATION

Erich Termin, Laufenburg; Walter Rogler, Bonn; Wilhelm Joch, Niederkassel, and Rudiger Honigschmid-Groscich, Ranzel, all of Germany, assignors to Dynamit Nobel AG, Froisdorf, Germany

Filed Oct. 27, 1970, Ser. No. 84,461
Claims priority, application Germany, Oct. 31, 1969, P 19 54 830.2; Sept. 30, 1970, P 20 48 018.6
Int. Cl. C07f *7/04*
U.S. Cl. 260—448.8 5 Claims

Dialkali salts of orthosilicic acid diesters, e.g. disodium orthosilicic acid dimethyl ester, are obtained by reaction of an alkali hydroxide with an orthosilicic acid tetraester. The dialkali salts of orthosilicic acid diesters are useful products for surface treatment of glass plates or glass fibers by tackling or etching.

3,679,725
COMPOUND [(β-HYDROXYPHENETHYL)AMINO] ETHYL THIOCYANATE AND ACID ADDITION SALTS THEREOF

Milon Walker Bullock, Hopewell, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 669,715, Sept. 22, 1967, abandoned, which is a division of Ser. No. 493,231, Oct. 5, 1965, abandoned. This application June 11, 1970, Ser. No. 45,571
Int. Cl. C07c *161/02*
U.S. Cl. 260—454 6 Claims

A method of preparing 2-[(β-hydroxyphenethyl)amino]ethyl thiocyanate by contacting α-phenyl-1-aziridineethanol with thiocyanic acid and products resulting, are described. The products of the process are useful as intermediates in preparing 2,3,5,6-tetrahydroimidazo[2,1-b]thiazoles useful as anthelmintics.

3,679,726
SUBSTITUTED BENZYL-THIOLCARBAMIC ACID ESTERS

Akio Kudamatsu; Masao Miyamoto, and Nobuo Fukazawa, all of Tokyo, Japan, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 10, 1969, Ser. No. 875,487
Claims priority, application Japan, Nov. 13, 1968, 43/82510
Int. Cl. C07c *155/02*
U.S. Cl. 260—455 A 1 Claim

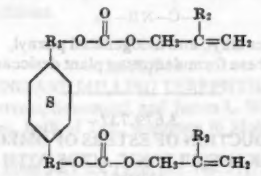
Substituted benzyl-thiolcarbamic acid esters, i.e. S-[(optionally mono and di chloro, bromo, nitro, alkyl and alkoxy substituted)-α-methyl-benzyl]-[N-alkyl and N,N-dialkyl]-thiolcarbamic acid esters and S-[(optionally mono and di chloro, bromo, nitro, alkyl and alkoxy substituted)-α-methyl-benzyl]-[pyrrolidino and piperidino]-carbothiolic acid esters, which possess herbicidal properties and which may be produced by conventional methods.

3,679,727
ALLYL CARBONATE AND SUBSTITUTED ALLYL CARBONATE ESTERS OF 1,4-DIALKYLOL CYCLOHEXANE, AND POLYMERS THEREOF

David A. Berry, Columbus, and Gilbert M. Gynn, Hilliard, both of Ohio, assignors to Dart Industries Inc., Los Angeles, Calif.

Filed July 22, 1969, Ser. No. 843,831
Int. Cl. C07c *69/00*; C08f *3/52*, *37/16*
U.S. Cl. 260—463 2 Claims

Disubstituted cyclohexane compositions designated as either bis(2-alkylallylcarbonyldioxy) 1,4-dialkylene cyclohexane or bis(2-arylallylcarbonyldioxy) 1,4-dialkylene cyclohexane represented by the formula:



wherein R_1 is a lower alkyl and R_2 is hydrogen or an alkyl, aryl, aralkyl or alkaryl hydrocarbon radical, are useful in the production of polymers and copolymers. Compositions containing these polymers and copolymers when combined with the proper filler have outstanding stain resistance as well as excellent impact resistance and other strength properties when compared with prior art compositions recognized as outstanding for use in dinnerware.

3,679,728
PROCESS FOR PREPARING METHYLENEBISIMINODIACETONITRILE

Charles R. Morgan, Laurel, Md., and David A. Daniels, Kendall Park, N.J., assignors to W. R. Grace & Co., New York, N.Y.

Filed Aug. 13, 1968, Ser. No. 752,186
Int. Cl. C07c *121/42*
U.S. Cl. 260—465.5 11 Claims

This invention is directed to a process for preparing methylenebisiminodiacetonitrile comprising reacting, in an aqueous system having a pH of about 0.9–3.9, ammonia, from an ammonia source selected from the group consisting of hexamethylenetetramine and ammonia sulfate (the hexamethylenetetramine also being a formaldehyde source), formaldehyde, and HCN to form methylenebisiminodiacetonitrile; separating, drying, and recovering the methylenebisiminodiacetonitrile, all as recited hereinafter.

3,679,729
CONTINUOUS PROCESS FOR PREPARING METHYLENEBISIMINODIACETONITRILE

David A. Daniels, Kendall Park, N.J., assignor to W. R. Grace & Co., New York, N.Y.

Filed Aug. 13, 1968, Ser. No. 752,375
Int. Cl. C07c *121/42*
U.S. Cl. 260—465.5 14 Claims

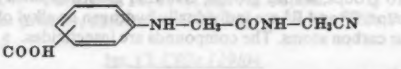
This invention is directed to a fully continuous process for preparing methylenebisiminodiacetonitrile comprising continuously reacting an aqueous acidic reaction mixture consisting essentially of an ammonia source selected from the group consisting of hexamethylenetetramine and ammonium sulfate, formaldehyde, and HCN to form methylenebisiminodiacetonitrile; continuously separating, continuously drying, and continuously recovering the methylenebisiminodiacetonitrile, all as recited hereinafter.

3,679,730
AMINOACETONITRILE DERIVATIVES

Tsutomu Irikura; Keigo Nishino; Seigo Suzue, all of Tokyo; Kelichi Ushiyama, Saitama-ken; Hirotaka Shinoda, Kawaguchi-shi, and Yoshinori Hasegawa, Tokyo, all of Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 558,281, June 17, 1966, Pat. No. 3,462,533. This application April 21, 1969, Ser. No. 832,532
Claims priority, application Japan, June 18, 1965, 40/36289
Int. Cl. C07c *121/52*
U.S. Cl. 260—465 D 4 Claims

Compounds of the formula



protect the liver against the action of carbon tetrachloride with-out exhibiting any side effects.

3,679,731
ACRYLOXY ESTERS OF ANHYDRIDES

Gordon M. Parker, Harwick; Marco Wismer, Gibsonia, and Ernest A. Hahn, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 9, 1969, Ser. No. 840,524
Int. Cl. C07c *69/76*
U.S. Cl. 260—475 P 9 Claims

This invention relates to acryloxy(or methacryloxy)alkyl(or alkyloxyalkyl) acryloxy(or methacryloxy)hydroxyalkyl organic polycarboxylic esters prepared by reacting an organic acid anhydride selected from the group consisting of trimellitic anhydride and pyromellitic anhydride with a hydroxyalkyl acrylate or methacrylate and then reacting this half-ester with

a glycidyl acrylate or methacrylate. These compounds are useful in coating compositions and particularly coating compositions curable by radiation.

3,679,732

PROCESS FOR OBTAINING 3-TRANS-DIMETHYLAMINO-4-PHENYL-4-TRANS-CARBETHOXY-Δ -CYCLOHEXENE

Robert M. Novack, Mendham, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed April 17, 1969, Ser. No. 817,176
Int. Cl. C07c *101/14*
U.S. Cl. 260—471 A 20 Claims

The separation of 3-trans-dimethylamino-4-phenyl-4-trans-carbethoxy-Δ^1-cyclohexene from a mixture comprising 3-trans-dimethylamino-4-phenyl-4-trans-carbethoxy-Δ^1-cyclohexene and 3-cis-dimethylamino-4-phenyl-4-cis-carbethoxy-Δ^1-cyclohexene and the partial isomerization of 3-cis-dimethylamino-4-phenyl-4-cis-carbethoxy-Δ^1-cyclohexene into the trans- isomer is described. In the separation procedure, the mixture containing 3-cis-dimethylamino-4-phenyl-4-cis-carbethoxy-Δ^1-cyclohexene and 3-trans-dimethylamino-4-phenyl-4-trans-carbethoxy-Δ^1-cyclohexene is mixed, in a suitable organic solvent, with oxalic acid or fumaric acid at a temperature up to reflux temperature until the reactants become dissolved in the solvent. When a solution is obtained, it is cooled to a temperature below about 10° C. to facilitate the precipitation of the oxalic acid or fumaric acid salt of 3-trans-dimethylamino-4-phenyl-4-trans-carbethoxy-Δ^1-cyclohexene. Partial isomerization of 3-cis-dimethylamino-4-phenyl-4-cis-carbethoxy-Δ^1-cyclohexene involves the step of heating the cis- isomer with an organic acid, or with an anhydride of an organic acid, at a temperature within the range of from about 60° C. to about 130° C. for a period of time sufficient to produce a mixture of the cis- and trans-isomers.

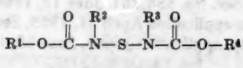
3,679,733

N-SUBSTITUTED ARYLCARBAMOYL SULFIDES

Melancthon Starr Brown, deceased, late of Berkley, Calif. (by Gustave K. Kohn, administrator), assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 9, 1970, Ser. No. 88,105
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 C 7 Claims

Compound of the formula



wherein R^1 and R^4 are individually aryl of six to 14 carbon atoms optionally substituted with alkyl groups, halogen atoms, nitro groups, alkoxy groups, alkylthio groups or dialkylamino groups; R^2 and R^3 are individually hydrogen or alkyl of one to four carbon atoms. The compounds are insecticides.

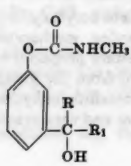
3,679,734

M-α-HYDROXYALIPHATICHYDROCARBYLPHENYL N-METHYL CARBAMATES

Gustave K. Kohn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed March 24, 1971, Ser. No. 127,778
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 C 4 Claims

m-α-hydroxyaliphatichydrocarbylphenyl N-methyl carbamates of the formula



wherein R is methyl or ethyl and R_1 is ethyl, propyl, vinyl or allyl find use as insecticides.

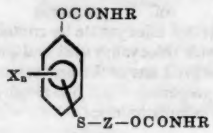
3,679,735

CARBAMIC ACID ESTERS

Walter Reifschneider, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 15, 1970, Ser. No. 81,145
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 C 9 Claims

Carbamic acid esters corresponding to the formula



wherein X represents loweralkyl of one to four carbon atoms, loweralkoxy of one to four carbon atoms, chloro, fluoro or bromo; *n* represents an integer of from 0 to 4; Z represents an alkylene radical of one to four carbon atoms and R represents loweralkyl of one to four carbon atoms, loweralkenyl of two to four carbon atoms or phenyl are prepared. These compounds are useful as pesticides.

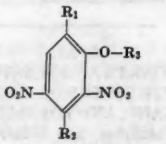
3,679,736

DINITROPHENYLCARBAMATES

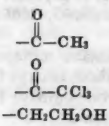
Ivan C. Popoff, Ambler, Pa., and Kenneth I. H. Williams, Sterling Junction, Mass., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed June 2, 1967, Ser. No. 643,054
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 C 3 Claims

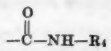
Formulations containing compounds of the structure



where R_1 is butyl, R_2 is H or lower alkyl, and R_3 is selected from the group consisting of



and



where R_4 is lower alkyl, and halogenated phenyl, and the use of these formulations as plant desiccants.

3,679,737

PRODUCTION OF ESTERS OF OMEGA-HYDROXYALKANESULFONIC ACIDS WITH ALKENOIC ACIDS

Heinz Pohlemann, Limburgerhof, and Rolf Wurmb, Heidelberg, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Nov. 25, 1969, Ser. No. 879,936
Claims priority, application Germany, Dec. 7, 1968, P 18 13 364.7
Int. Cl. C07c *69/54, 69/60*
U.S. Cl. 260—486 R 8 Claims

Production of ω-hydroxyalkanesulfonic/alkenoic acid esters by reaction of alkali metal or alkaline earth metal salts of al-

kenoic acids with sultones in the presence of alcohols at a temperature below 45° C. The products are starting materials for the production of fibers, detergents, wetting agents, dispersing agents, ion exchangers and plastics.

3,679,738

ALKALI METAL SALTS OF POLYACETYLENIC POLYOIC ACIDS

George E. Cremeans, Groveport, Ohio, assignor to The Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 555,229, June 6, 1966, Pat. No. 3,501,297. This application March 16, 1970, Ser. No. 20,051

Int. Cl. C07c *57/24, 69/52*

U.S. Cl. 260—485 R 5 Claims

Radiant-energy photosensitive crystalline alkali metal salts of polyacetylenicpolyoic acids and the partial lower alkyl esters of the acids, which acids contain a minimum of two acetylenic linkages as a conjugated system; and a preparing of a clear and transparent body containing polyvinyl alcohol fixedly positioning dispersed radiant-energy photosensitive crystalline alkali metal salts.

3,679,739

PRODUCTION OF ESTERS OF ACETIC ACID

Gerhard Schulz, and Guenther Matthias, both of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed June 13, 1969, Ser. No. 833,178

Claims priority, application Germany, June 21, 1968, P 17 68 708.0

Int. Cl. C07c *67/00, 69/14*

U.S. Cl. 260—488 F 10 Claims

Production of esters of acetic acid by reaction of ketenes with alcohols in the presence of metal sulfides. The products are valuable intermediates, for example for adhesives and photographic film, and some of them are important solvents, for example for surface coatings.

3,679,740

PREPARATION OF AROMATIC ACIDS

Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 17, 1969, Ser. No. 886,038

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 R 9 Claims

Aromatic acids such as benzoic acid are prepared by treating an alkylaromatic compound such as toluene with an oxygen-containing gas in the presence of a metal-containing compound at an elevated temperature in the range of from about 150° to about 250° C. The yields of the desired acids are improved by effecting the process in the presence of a compound containing nitrogen in the form of ammonia, amines, or compounds which will generate ammonia or amines under the reaction conditions.

3,679,741

PURIFYING AND MILLING TEREPHTHALIC ACID

George T. Burress, Beaumont, and James L. Willis, Jr., Beaux-art Gardens, both of Tex., assignors to Mobil Oil Corporation

Filed July 23, 1970, Ser. No. 57,779

Int. Cl. C07c *51/42*

U.S. Cl. 260—525 9 Claims

Impure terephthalic acid contaminated with intermediate products of the oxidation of p-xylene is processed into a state suitable for easy direct esterification with glycol by a combination of contact of the crude acid at 600°–750°F. in the vapor state with a Group VIII metal catalyst (e.g., Pt or Pd on carbon) and condensation of the purified acid from the treated vapor together with subsequent disintegration of the resulting predominantly rough aggregate particles of condensate by a high intensity wet or dry milling without metal-to-metal contact (e.g., high impact milling) to produce mainly discrete smooth particles of high purity and excellent dry flow and glycol slurrying characteristics; optionally, the condensed aggregate particles may also be leached in a solvent (e.g., water) at elevated temperatures and recrystallized prior to milling to further enhance both handling properties and purity.

3,679,742

NEGAMYCIN

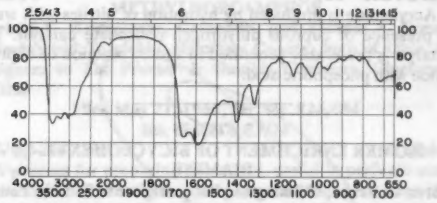
Hamao Umezawa, Tokyo; Shinichi Kondo, Yokohama; Kenji Takeuchi Maeda, Tomio, and Masa Hamada, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kai, Tokyo, Japan

Filed April 28, 1970, Ser. No. 32,641

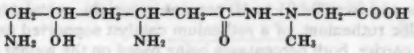
Claims priority, application Japan, May 8, 1969, 44/34827; Oct. 22, 1969, 44/83843

Int. Cl. C07c *101/34*

U.S. Cl. 260—534 M 1 Claim



Process for the production of an antibiotic substance called negamycin which comprises cultivating a strain of Streptomyces purpeofuscus A.T.C.C. 21470 in an aqueous carbohydrate solution containing a nitrogenous nutrient under aerobic conditions until substantial antibacterial activity is imparted to said solution and then recovering said negamycin from said solution and negamycin which is effective for inhibiting Pseudomonas, Salmonella, Shigella, Klebsiella, E.coli, Staphylococci and which has the following structure:



3,679,743

CHLORO-OXYCARBONYL ISOCYANATES

Hermann Hagemann, Cologne, Flittard, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

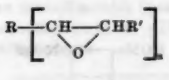
Filed June 16, 1970, Ser. No. 46,822

Claims priority, application Germany, June 20, 1969, P 19 31 283.5

Int. Cl. C07c *119/04*

U.S. Cl. 260—545 R 4 Claims

Organic isocyanates are prepared by reacting substantially equimolar quantities of N-chlorocarbonyl isocyanate and an epoxide compound having the formula



wherein

R is hydrogen or a substituted or unsubstituted, saturated or unsaturated organic radical selected from the group consisting of C_1 to C_{12} alkyl, aralkyl, aryl, alkylene, aralkylene or arylene;

R′ is hydrogen or a substituted or unsubstituted, saturated or unsaturated organic radical selected from the group consisting of C_1 to C_{12} alkyl, aralkyl or aryl; and *n* is 1 or 2.

at a temperature of from about −50° to about 200° C.

3,679,744

THIODIALKANOAMIDOPHENOL ANTIOXIDANTS

Martin Knell, Ossining, and Martin Dexter, Briarcliff Manor, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed March 25, 1969, Ser. No. 810,352
Int. Cl. C07c *103/38*
U.S. Cl. 260—559 T 4 Claims

Novel thiodialkanoamidophenol compounds are provided by a procedure involving the reaction of an alkylaminophenol and a thiodialkanoyl chloride. The thiodialkanoamidophenol products are useful as stabilizers of organic materials which are subject to oxidative deterioration.

3,679,745

HYDRATION OF ACRYLONITRILE

Erwin Frederick Schoenbrunn, Ridgefield, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed April 22, 1970, Ser. No. 31,012
Int. Cl. C07c *103/08*
U.S. Cl. 260—561 N 4 Claims

Acrylamide is produced by hydration of nitriles with water in presence of cuprous dihydrogen phosphate catalyst. The catalyst is preferably generated in situ by reaction of cuprous oxide with phosphoric acid.

3,679,746

ISOMER ENRICHMENT OF BICYCLOHEXYL-4,4'-DIAMINE

Loren D. Brake, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 27, 1969, Ser. No. 869,502
Int. Cl. C07c *87/40*
U.S. Cl. 260—563 R 24 Claims

A mixture of the stereoisomers of bicyclohexyl-4,4'-diamine not at equilibrium is converted to a mixture of stereoisomers approaching the equilibrium ratio by heating the mixture of stereoisomers to a temperature of from 150° to 300° C. in the presence of hydrogen at a pressure of from 50 to 5,500 pounds per square inch gage and a total pressure of from 500 to 15,000 pounds per square inch gage, in the presence of from 0 to 200 percent by weight of added ammonia and from 0.001 to 10 percent by weight, calculated as metallic ruthenium, of a ruthenium catalyst supported on an inert carrier, both percentages being based on the weight of a starting material, said catalyst being alkali moderated with from 0.05 to 15 percent of a basic alkali metal compound calculated as the alkali metal. Either essentially pure trans,trans-bicyclohexyl-4,4'-diamine or an enriched mixture of cis,trans- and cis,cis-bicyclohexyl-4,4'-diamine can be recovered.

3,679,747

ACENAPHTHENE DERIVATIVES

Seymour D. Levine, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,735
Int. Cl. C07c *131/00*
U.S. Cl. 260—566 AE 4 Claims

Acenaphthene derivatives are provided having the general structure:

wherein R and R' are alkyl having from one to about three carbon atoms. These compounds possess anti-inflammatory activity.

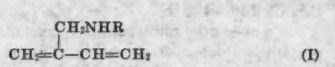
3,679,748

2-AMINOMETHYL-1,3-BUTADIENE MONOMERS

Giffin D. Jones; Gerald R. Geyer, both of Midland, Mich., and Melvin J. Hatch, Socorro, N. Mex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 798,512, Oct. 23, 1968, Pat. No. 3,544,532, which is a division of Ser. No. 381,546, July 9, 1964, abandoned. This application Sept. 3, 1970, Ser. No. 69,442
Int. Cl. C07c *87/24*
U.S. Cl. 260—583 H 5 Claims

New cationic 2-aminomethyl-1,3-butadiene monomers of Formula I:



(I)

are prepared by reacting 2-halomethyl-1,3-butadiene with ammonia or an organic amine NH_2R (II). These aminomethyl monomers can be polymerized to form cationic polymers and copolymers. They are particularly suitable for modifying styrene-maleic anhydride copolymers to form vinyl resins with increased toughness desirable for coatings, adhesives, laminates, foams, potting resins, and fiber-reinforced panels.

3,679,749

PERHYDRO 1,4,9,9-TETRAMETHYL-4,7-METHANDAZULENONES

James D. Grossman, Old Bridge; Braja D. Mookherjee, Matawan; Robert De Simone, Madison Township, Middlesex County, and Ernst T. Theimer, Rumson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed June 10, 1968, Ser. No. 735,544
Int. Cl. C07c *49/27*
U.S. Cl. 260—586 R 4 Claims

Novel perhydro 1,4,9,9-tetramethyl-4,7-methano-azulenones useful as olfactory agents; perfume compositions containing such azulenones; and methods for preparing such azulenones and such compositions.

3,679,750

HEXAHYDRO-1,4,9,9-TETRAMETHYL-4,7-METHANO-AZULENONES

Braja D. Mookherjee, Matawan, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed June 10, 1968, Ser. No. 735,545
Int. Cl. C07c *49/54*
U.S. Cl. 260—586 A 3 Claims

Novel hexahydro-1,4,9,9-tetramethyl-4,7-methanoazulenones useful as olfactory agents; perfume compositions containing such azulenones; and methods for preparing such azulenones and such compositions.

3,679,751

BORIC ACID RECOVERY

Richard L. Golden, Oradell, N.J., and Gerald Mazzella, Brookyln, N.Y., assignors to Halcon International, Inc.

Division of Ser. No. 429,165, Jan. 29, 1965, Pat. No. 3,423,471. This application July 25, 1968, Ser. No. 747,474
Int. Cl. C07c *45/02*
U.S. Cl. 260—586 B 4 Claims

This invention relates to an improved process for the recovery of boron compounds used to form borate esters in hydrocarbon oxidation processes, which comprises removing dissolved and entrained organic material from the aqueous phase of the hydrocarbon oxidation process by extraction with a hydrocarbon or alcohol solvent.

3,679,752

2-CYCLOHEXYLACYLCYCLO-ALKANONES

Sydney Archer, Bethlehem, and Roman R. Lorenz, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 589,201, Oct. 25, 1966, Pat. No. 3,523,959. This application Oct. 13, 1969, Ser. No. 866,007

Int. Cl. C07c *49/43*

U.S. Cl. 260—586 R 2 Claims

2-Cyclohexylacetylcyclohexanone, 2-cyclohexylacetylcyclopentanone, and 2-(3-cyclohexylpropanoyl)cyclopentanone are prepared by heating in an acidic aqueous medium 2-cyclohexylacetyl-1-BN-cyclohexene, 2-cyclohexylacetyl-1-BN-cyclopentene and 2-(3-cyclohexylpropanoyl)-1-BN-cyclopentene, respectively, where BN is morpholino, piperidino, pyrrolidino or di-(lower-alkyl)amino. These compounds are intermediates for the preparation of 2-hydroxy-3-(8-cyclohexyloctyl)-1,4-naphthoquinone and 2-hydroxy-3-(7-cyclohexylheptyl)-1,4-naphthoquinone, which are potent antimalarial agents.

3,679,753

PREPARATION OF DIHYDROCATECHOL FROM CYCLOHEXANONE

Nicholas P. Greco, Pittsburgh, Pa., assignor to Koppers Company, Inc.

Filed Feb. 11, 1969, Ser. No. 798,467

Int. Cl. C07c *45/00*

U.S. Cl. 260—586 B 8 Claims

Dihydrocatechol is prepared from cyclohexanone by oxidation in the presence of aqueous selenium dioxide at a temperature of 15°–25°C. The red selenium produced by the reduction of a selenium dioxide is converted to an easily separable form of black selenium powder by removing excess water from the mixture, adding black selenium to the product mixture and heating. The black selenium is easily separated by filtration and the dihydrocatechol recovered from this product mixture.

3,679,754

δ-IONONE DERIVATIVES AND PROCESS THEREFOR

John J. Beereboom, Old Lyme, Conn., assignor to Pfijer Inc., New York, N.Y.

Filed Jan. 23, 1968, Ser. No. 699,803

Int. Cl. C07c *49/48*

U.S. Cl. 260—587 6 Claims

The conversion of α and β-ionone, and mixtures thereof, to various alkyl-substituted δ-ionone derivatives is accomplished in high yield by the use of a base-catalyzed alkylation reaction step. The resulting isoalkyl-δ-ionones are useful as perfume and flavor odorants, with isoethyl-δ-ionone resembling α-irone.

3,679,755

NITROSO ETHER POLYMERS

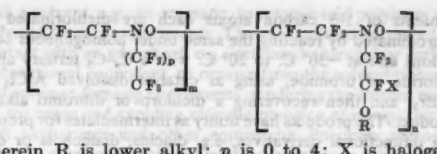
Nathan Mayes, Barrington, R.I., and Robert A. Falk, Rockaway, N.J., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Nov. 29, 1968, Ser. No. 780,297

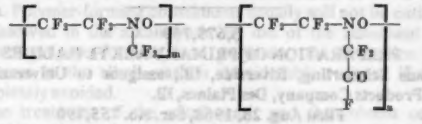
Int. Cl. C07c *43/00*

U.S. Cl. 260—615 BF 5 Claims

Nitroso polymers are provided which are produced by reacting certain nitroso ether monomers. These polymers in turn yield novel polymers by converting, partially or substantially fully, pendant groups in the obtained polymer. The precursor polymers as well as the converted polymers are highly oxidation resistant. Elastomers can be produced directly from the precursor as well as the desired polymer. Liquid as well as solid polymers are provided. These polymers are represented by the following general formulas



wherein R is lower alkyl; p is 0 to 4; X is halogen; wherein the ratio of m:n is 1:1 to 50:1 and



The liquid polymers are appropriately chain-terminated with a chain terminator such as chlorine.

3,679,756

PROCESS FOR PREPARING β-SANTALOL FROM 3-METHYLNORCAMPHOR

Herbert C. Kretschmar, Greenhills, and William F. Erman, Springfield Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 21, 1969, Ser. No. 826,684

Int. Cl. C07c *35/28*

U.S. Cl. 260—631.5 5 Claims

A process for preparing β-santalol, useful in perfume compositions, from 3-methylnorcamphor comprising the steps of

1. alkylating 3-methylnorcamphor with β-bromopropionaldehyde ethylene glycol acetal;
2. reacting the reaction product of Step (1) with a methylmetallic compound, such as methyllithium, followed by acid hydrolysis;
3. reacting the reaction product of Step (2) with (carbethoxyethylidene)triphenylphosphorane;
4. dehydrating the reaction product of Step (3) with a dehydrating agent, such as thionyl chloride; and
5. reducing the reaction product of Step (4) with a reducing agent, such as lithium aluminum hydride, to obtain β-santalol,

and novel compounds produced therein are disclosed.

3,679,757

PREPARATION OF PERFLUOROALKYL IODIDES

Barry Tittle, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 813,737, April 4, 1969, abandoned. This application Nov. 24, 1969, Ser. No. 879,624

Claims priority, application Great Britain, April 24, 1968, 19,426/68

Int. Cl. C08f *3/32*; C07c *19/08*

U.S. Cl. 260—653.1 T 4 Claims

Perfluoroalkyl iodides $C_2F_5(C_2F_4)_nI$, where n is zero or an integer equal at least to one, are made by heating perhaloalkyl arsines with iodine or with iodine and tetrafluoroethylene at temperatures from 40° – 280° C and pressures from atmospheric up to about 30 atmospheres. The preferred reaction is that between monofluorobis (pentafluoroethyl)arsine, iodine and tetrafluoroethylene at 50° – 280° C and under pressures from 5 to 30 atmospheres.

3,679,758

DIHALOGENATION OF BRANCHED ALKANES

Abraham Schneider, Overbrook Hills, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 702,789, Feb. 5, 1968, Pat. No. 3,485,880. This application Dec. 9, 1969, Ser. No. 883,580

Int. Cl. C07c *17/10*

U.S. Cl. 260—659 R 23 Claims

Singly and doubly branched alkanes of the C_7–C_{20} range having a chain of at least 6 carbon atoms and 1-2 alkyl sub-

stituents of 1-3 carbon atoms each are dichlorinated or dibrominated by reacting the same under homogeneous conditions and at −30° C. to 20° C. with a C_4–C_5 tertiary alkyl chloride or bromide, using as catalyst dissolved $AlCl_3$ or $AlBr_3$, and then recovering a dichloro or dibromo alkane product. The products have utility as intermediates for preparing difunctional derivatives, e.g. diacids, dialcohols or diamides, which are useful as monomers in polymer manufacture.

3,679,759

PREPARATION OF PRIMARY ALKYL HALIDES

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 28, 1968, Ser. No. 755,790
Int. Cl. C07c 17/08
U.S. Cl. 260—663 9 Claims

Primary alkyl halides are prepared by reacting a 1-alkene with an aqueous hydrohalic acid at an elevated temperature above about 200° C. to prepare alkyl halides in which the halogen substituent is in a primary position.

3,679,760

PREPARATION OF DIARYLALKANES

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 22, 1971, Ser. No. 117,741
Int. Cl. C07c 15/12, 15/14
U.S. Cl. 260—668 C 10 Claims

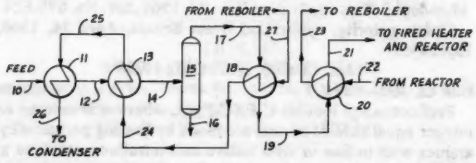
Diarylalkanes are prepared by reacting an α-haloalkyl-aromatic compound with an aromatic compound in the presence of certain catalysts comprising copper halides at elevated temperatures to prepare the desired products. The reaction is exemplified by reacting benzyl chloride with benzene to form diphenylmethane.

3,679,761

PROCESS FOR THE VAPORIZATION OF ALKYL AROMATIC LIQUID FEEDS WITH REMOVAL OF HIGH BOILERS

Claude W. Smalling, Jr., 101 Larkspur, Alvin, Tex.

Filed May 15, 1970, Ser. No. 37,792
Int. Cl. C07c 3/58
U.S. Cl. 260—672 NC 7 Claims



An improved process for the vaporization of liquid hydrocarbon feeds wherein high boiling components present in the liquid feed are removed from the feed prior to subsequent processing comprising heating the liquid feed to a temperature at, but just below, its dew point, introducing the thus heated feed into a separation zone where any high boiling liquid components are removed and removing a substantially dry gaseous feed from the separation zone. The process minimizes fouling in heat exchangers and other indirect heating systems caused by coking of entrained high boiling liquids in the vaporized feed.

3,679,762

SELECTIVE HYDROGENATION OF ACETYLENES

Richard W. La Hue, and Nolan A. Smith, both of Louisville, Ky., assignors to Catalysts and Chemicals Inc., Louisville, Ky.

Filed June 8, 1970, Ser. No. 44,567
Int. Cl. C07c 5/08
U.S. Cl. 260—677 H 6 Claims

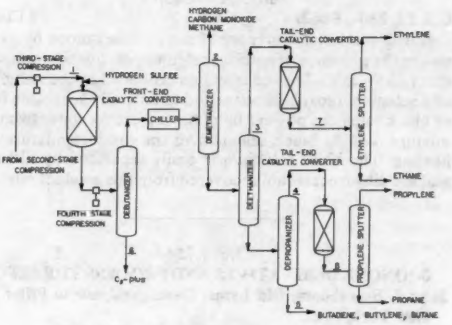
In view of the exothermic nature of acetylene hydrogenation reactions it is necessary to effect the hydrogenation of process gas streams containing larger quantities of acetylenes under other than usually practiced conditions. Under such circumstances isothermal operation has become the process of choice. Whereas a multiplicity of palladium catalysts have found their place in adiabatic operation, very few of these perform satisfactorily in isothermal reactors. We have found a palladium catalyst which outperforms these known catalysts.

3,679,763

PURIFICATION OF PROCESS GAS STREAMS BY HYDROGENATION

Jimmy Y. Livingston, Louisville, Ky., assignor to Catalysts and Chemicals Inc., Louisville, Ky.

Filed July 28, 1970, Ser. No. 58,887
Int. Cl. C07c 5/07
U.S. Cl. 260—677 H 5 Claims



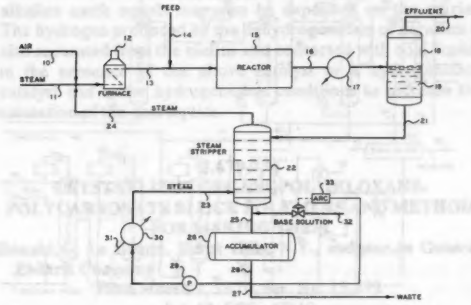
Process gases, for example, those gases derived from the pyrolysis or cracking of butane, kerosene, naphtha, refinery gases and other mineral oil and gas oil fractions, are excellent sources of olefins for the plastics industry. The acetylenes must of course be removed from these process gases before they are usable as raw materials for plastics. Hydrogenation is the process of choice, and a selective catalyst must be used so that acetylenes will be hydrogenated to the exclusion of the olefin. Partially sulfided catalysts afford a high degree of selectivity in hydrogenating acetylenes to the exclusion of olefins, but there is no selectivity between acetylenes and dienes, dienes being desired products. Accordingly the C_4 stream is generally removed prior to the selective hydrogenation reaction. Butylene, butadiene, propylene, and ethylene are removed herein from a process gas stream also containing acetylene and methylacetylene and propadiene by hydrogenating the acetylenes with minimal hydrogenation of butylene, butadiene, propylene, and ethylene. The process gas stream is passed through a bed of a catalyst so that the acetylenes are incompletely hydrogenated, the butadiene thus remaining unsaturated. Subsequently the gas stream is separated into C_2, C_3, and C_4 fractions, and then the C_2, C_3, and C_4 fractions are conducted to separate hydrogenation zones.

3,679,764

PURIFICATION OF OXIDATIVE DEHYDROGENATION PROCESS EFFLUENTS

Robert A. Hinton, Lawrence, Kans., and John E. Cottle, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed June 4, 1969, Ser. No. 830,398
Int. Cl. B01d *3/38*; C07c *7/00*, *11/22*
U.S. Cl. 260—680 E 10 Claims



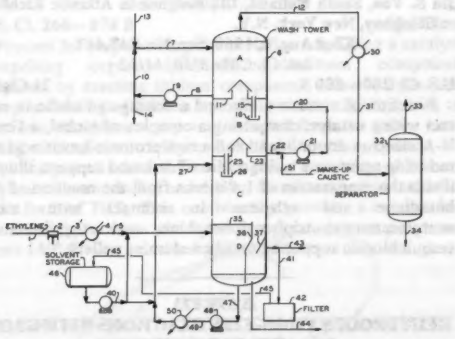
Water containing oxygenated hydrocarbons resulting from hydrocarbon oxidative dehydrogenation processes is rendered substantially non-toxic by stripping with steam to remove the oxygenated hydrocarbons including carbonyls and returning to the oxidative dehydrogenation process to suppress the formation of additional oxygenated hydrocarbons and the conversion of a portion of the steam stripped water to steam for use as stripping medium. The steam stripped water phase can be neutralized with a base prior to reboiling and converted to steam for use as the stripping medium.

3,679,765

REMOVAL OF POLYMER FROM CRACKED GAS CAUSTIC WASHES OR CAUSTIC SOLUTIONS

William L. Houston, Jr., and William C. Clark, both of Sweeny, Tex., assignors to Phillips Petroleum Company

Filed Oct. 29, 1969, Ser. No. 872,309
Int. Cl. C07c *3/00*
U.S. Cl. 260—683 R 5 Claims



A cracked hydrocarbon gas, e.g., an effluent resulting from the pyrolytic conversion of a feed consisting essentially of ethane to form ethylene, is treated conventionally to produce a stream containing essentially ethylene which is treated with an alkali wash. The used alkali containing solid and other polymer formed therein and polymer-forming constituents is periodically or continuously treated by contacting the same with a solvent, e.g., an aromatic, to remove said polymers and polymer forming constituents. The used solvent is treated by contact with an adsorbent, e.g., activated charcoal or carbon or functional equivalent, to remove from the solvent polymer and polymer-forming constituents, rendering the solvent suitable for reuse and avoiding ultimate plugging of pumps, pipes, heat exchangers and other equipment. Polymers removed from the alkali wash can be liquid but usually are substantially solid and are at least to a real extent insoluble in the alkali wash. Polymer-forming constituents usually will not be entirely dissolved in the alkali wash. By use of the adsorbent to remove polymer-formers, and polymers, the formation of polymers in the alkali wash is considerably reduced if not completely avoided.

The treatment of the alkali wash and the solvent considerably reduces the growth of polymer initially, the treatment of solvent with the charcoal considerably reducing the tendency of polymer-forming constituents to form polymer by simply removing the polymer-forming constituents.

3,679,766

CRYSTALLIZATION OF 2,6-DIPHENYLPHENOL

Donald L. Kippax, West Stockbridge, and Kevin E. Murphy, Pittsfield, both of Mass., assignors to General Electric Company

Filed Dec. 22, 1966, Ser. No. 603,976
Int. Cl. C07c *37/22*
U.S. Cl. 260—620 4 Claims

A process for the separation of high purity 2,6-diphenylphenol from a mixture of 2,6-disubstituted phenols by fractional crystallization. The process is characterized by at least one crystallization stage from a solvent system comprising a mixture of an aliphatic solvent and an aromatic solvent. By the process of the invention, 2,6-diphenylphenol having a purity of at least 99.8% can be separated from a mixture of phenols using only two crystallization stages.

3,679,767

PROCESS FOR PREPARING HALOGENATED AND MIXED HALOGENATED DERIVATIVES OF METHANE BY THE CHLOROFLUORINATION OF METHANE

Martino Vecchio, Milan; Italo Cammarata, Bollate, and Vittorio Fattore, Milan, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 608,705, Jan. 11, 1967, abandoned, which is a continuation-in-part of Ser. No. 458,413, May 24, 1965, abandoned. This application Aug. 8, 1968, Ser. No. 751,056
Claims priority, application Italy, May 29, 1964, 11912 A/64
Int. Cl. C07c *17/10*
U.S. Cl. 260—653.8 2 Claims

Process for preparing chlorofluoromethanes by reaction of methane, chlorine and a recycle mixture of halogenated hydrocarbons, containing prevailingly carbon tetrachloride, with mineral calcium fluoride in a fluid bed at a temperature of from 450° to 600°C and for a contact time of from 0.5 to 120 seconds.

3,679,768

HYDRODEALKYLATION PROCESS WITH CATALYST OF GROUP VIB METALS PROMOTED BY TIN OXIDE OR LEAD OXIDE

Ronald A. Kmecak; Stephen M. Kovach, both of Ashland, and Ralph E. Patrick, Flatwoods, all of Ky., assignors to Ashland Oil, Inc., Houston, Tex.

Filed Oct. 22, 1968, Ser. No. 769,733
Int. Cl. C07c *3/58*; B01j *11/06*
U.S. Cl. 260—672 R 9 Claims

A process for the hydrodealkylation of alkyl-substituted aromatic hydrocarbons, including contacting the alkyl-substituted aromatic hydrocarbons with a catalyst comprising a

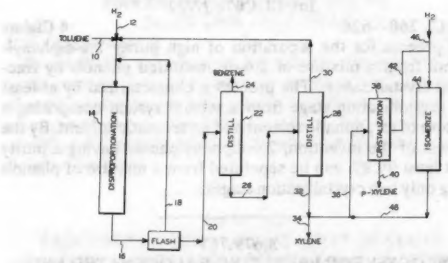
metal of Group VIB of the Periodic System, such as chromium, molybdenum and tungsten, in an amount from about 5 to 15 percent by weight based on the finished catalyst and a promoter comprising a metal of Group IVA of the Periodic System, such as tin and lead, in an amount between about 1 to 15 percent by weight of the final catalyst, both deposited on an inert oxide support, such as gamma aluminas, silica-alumina, magnesia-alumina, etc., at a temperature of about 1,050° to 1,200° F, a pressure of about 100 to 1,000 psig., a liquid hourly space velocity of about 0.1 to 5 and a hydrogen-to-hydrocarbon mole ratio between about 3 and 15 to 1. A second promoting agent selected from the Group consisting of alkali metals, alkaline earth metals, and rare earth metals, such as potassium, rubidium, cesium, calcium, strontium, barium, cerium, thorium, etc., may also be deposited on the carrier.

3,679,769

ALKYL TRANSFER OF ALKYL AROMATICS WITH GROUP VIII METALS ON ZEOLITES

Ronald A. Kmecak, and Stephen M. Kovach, both of Ashland, Ky., assignors to Ashland Oil, Inc., Houston, Tex.

Filed Dec. 19, 1968, Ser. No. 785,251
Int. Cl. C07c 3/62, 11/04; C10g 23/02, 31/14
U.S. Cl. 260—672 T **8 Claims**



A process for the alkyl transfer of alkyl aromatics including contacting an alkyl aromatic feed material, such as toluene, with a catalyst comprising a precious metal of Group VIII, such as platinum, palladium, rhodium, ruthenium, etc., deposited on a zeolite base at a temperature of about 700° to 1,100° F, a pressure of about 0 to 2,000 psig, and a liquid hourly space velocity of about 0.1 to 10, and in the presence of hydrogen introduced at a rate of about 1 to 10 moles hydrogen per mole of hydrocarbon feed. Promoters selected from Group I, Group II, Group IV, and the Rare Earth metals of the Periodic System may be added to the catalyst. Deactivated catalyst may be periodically rejuvenated by discontinuing the introduction of aromatic feed material and purging with hydrogen and the catalyst can be reactivated by calcination in air. Where toluene is the feed, the alkyl transfer product may be distilled to separate benzene, toluene and xylenes, the toluene may be recycled to the alkyl transfer step, the xylenes may be crystallized to separate para-xylene from the remaining xylenes, the mother liquor from the crystallization step may thereafter be isomerized to readjust the para-xylene content and the product of the isomerization may be recycled to the crystallization zone.

3,679,770

PROCESS FOR REMOVAL OF CATALYST COMPLEX

Charles F. Nicolet, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Aug. 10, 1970, Ser. No. 62,707
Int. Cl. C07c 7/10
U.S. Cl. 260—674 A **18 Claims**

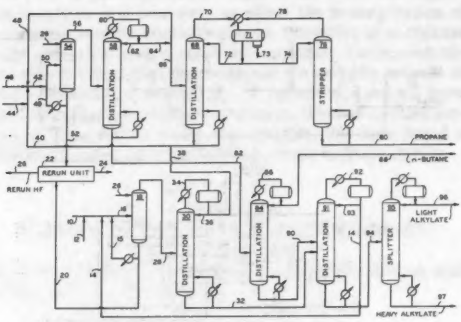
Friedel-Crafts catalyst complexes are converted into fast-settling agglomerates having easily permeable filter cakes by treatment with mixtures comprising ammonia and water.

3,679,771

CONVERSION OF HYDROCARBONS

Thomas Hutson, Jr., and Cecil O. Carter, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed May 12, 1970, Ser. No. 36,528
Int. Cl. C07c 3/54, 3/62, 9/16
U.S. Cl. 260—676 R **15 Claims**



Isoparaffins are converted in a reaction zone to other hydrocarbons including isoparaffins containing fewer carbon atoms per molecule and isoparaffins containing more carbon atoms per molecule by contacting an isoparaffin feedstock with hydrofluoric acid in the presence of an amount of an olefin which is sufficient to increase the conversion of said feedstock. In a combination process said isoparaffin product containing fewer carbon atoms per molecule than the isoparaffin feedstock is passed to an alkylation zone as a portion of one of the reactants thereto. Isoparaffin product containing the same number of carbon atoms as said first-mentioned isoparaffin feedstock, and which are produced in said alkylation zone, are passed to the first-mentioned reaction zone as a portion of the feedstock thereto. Isoparaffin product containing more carbon atoms per molecule are blended with at least a portion of the hydrocarbon product produced in the alkylation zone.

3,679,772

CHEMICAL PROCESS

Jin S. Yoo, South Holland, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Aug. 4, 1969, Ser. No. 847,447
Int. Cl. C07c 3/10, 11/12
U.S. Cl. 260—680 B **21 Claims**

Reaction of a mono-olefin and a conjugated olefin in contact with a catalyst comprising a complex of nickel, a Group V-A electron donor ligand and a non-protonic Lewis acid and reducing agent on a solid, acidic silica-based support. Illustrative is the preparation of 1,4-dienes from the reaction of 1,3-butadiene and ethylene in contact with nickel acetylacetonate, triphenylphosphine, and ethylaluminum-sesquichloride supported on silica-alumina pellets.

3,679,773

DEHYDROGENATION-TYPE REACTIONS WITH GROUP VIII CATALYSTS

Stephen M. Kovach, and Ronald A. Kmecak, both of Ashland, Ky., assignors to Ashland Oil, Inc., Houston, Tex.

Filed Oct. 22, 1968, Ser. No. 769,751
Int. Cl. C07c 5/18, 11/04
U.S. Cl. 260—683.3 **10 Claims**

A process for the dehydrocyclization of paraffinic hydrocarbons or the dehydrogenation of low molecular weight paraffins to produce hydrogen and mono-olefins, including, contacting the organic materials with a catalyst of an active metal from Group VIII of the Periodic System, such as platinum, pal-

ladium, ruthenium and nickel, in amounts of about 0.5 to 5 percent of the finished catalyst and a promoter from the rare earth metal Group of the Periodic System, such as cerium and thorium, in an amount of 1 to 10 percent of the finished catalyst, both deposited on an inert oxide support, such as gamma-type aluminas, silica-alumina, silica-magnesia, etc., at a temperature between about 550° and 1,250°F, a pressure of 0.01 to 2,600 mm. of mercury absolute, and a liquid hourly space velocity of 0.1 to 10. A promoting amount of a second metal selected from the group consisting of alkali metals and alkaline earth metals may also be deposited on the carrier. The hydrogen produced by the dehydrogenation of paraffins is also separated from the olefins and contacted with coal liquids in the presence of the above catalyst or a hydrogenation catalyst and under hydrogenation conditions to increase the saturation of the coal liquids.

3,679,774

CRYSTALLIZED ORGANOPOLYSILOXANE-POLYCARBONATE BLOCK POLYMERS AND METHOD FOR MAKING THEM

Donald G. Le Grand, Burnt Hills, N.Y., assignor to General Electric Company

Filed March 2, 1970, Ser. No. 15,472

Int. Cl. C08g *47/10*

U.S. Cl. 260—824 R **6 Claims**

Random alternating organopolysiloxane-polycarbonate block polymers can be crystallized by contacting the block polymer with a methylalkylketone in the vapor or liquid state. The resulting crystallized organopolysiloxane-polycarbonate block polymers exhibit improved physical characteristics, such as tensile strength (psi) and improved resistance to distortion at elevated temperature. The crystallized organopolysiloxane-polycarbonate block polymers can be employed as dielectrics and as permselective membranes for separating gases and vapors.

3,679,775

OLEFIN POLYMERIZATION PROCESS AND CATALYST

Hugh J. Hagemeyer, Jr., and Vernon K. Park, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 597,481, Nov. 28, 1966, abandoned, which is a continuation of Ser. No. 464,580, June 16, 1965, abandoned, which is a continuation of Ser. No. 146,004, Oct. 18, 1961, abandoned. This application April 3, 1968, Ser. No. 718,337

Int. Cl. C08f *1/56, 3/10*

U.S. Cl. 260—878 B **15 Claims**

Process for polymerizing alpha-olefins employing a catalyst comprising organopolylithiumalumaluminum compound prepared by reacting lithium compounds selected from the group consisting of lithium hydride and lithium alkyl with at least one aluminum compound selected from the group consisting of aluminum trialkyl and dialkyl aluminum hydride, an alkyl compound selected from the group consisting of lithium alkyl, aluminum trialkyl and dialkyl aluminum hydride and the alpha form of $TiCl_3$. This combination provides a catalyst for commercial processes which can be operated at temperatures above 140° C. over extended periods of time.

3,679,776

POLYMERIZATION OF HYDROCARBON DIENES WITH LITHIUM-SODIUM ALLOYS

Robert Paul Foss, Runnymede, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed April 1, 1970, Ser. No. 24,540

Int. Cl. C08d *1/20, 3/06, 3/10*

U.S. Cl. 260—879 **12 Claims**

Conjugated hydrocarbon dienes are polymerized with lithium-sodium alloy initiator containing 0.1 to 90 mole percent sodium in a nonpolar medium at about −10°C. to 100°C. to yield the corresponding lithiopolydiene in which a desired high percentage of the repeating units have cis-1,4-structure. The lithiopolydienes can be used to prepare block copolymers of the ABA type in which the A units are polypivalolactone or a polymer of any other anionically polymerizable monomer and the B unit is a polydiene. The alloys can also be applied to prepare homopolydienes with high 1,4-cis structure, which are useful as vulcanizable elastomers.

3,679,777

PHOTODEGRADABLE POLYOLEFINS

Bernard Lambert, Paris, France, assignor to Ethylene Plastique

Filed Aug. 31, 1970, Ser. No. 68,509

Claims priority, application Great Britain, Sept. 5, 1969, 44,093/69

Int. Cl. C08f *45/00, 3/04*

U.S. Cl. 260—897 A **3 Claims**

The photodegradation of polyolefin compositions is accelerated by the incorporation therein of from 0.1 to 2 percent by weight of a γ-pyrone ring-containing compound, such as chromone, flavone or xanthone. Polyolefin films containing such additives are useful as wrapping films and, particularly, agricultural mulching films.

3,679,778

AMIDE AND CARBAMATE DIPHOSPHONATES AND PROCESS FOR THEIR MANUFACTURE

Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

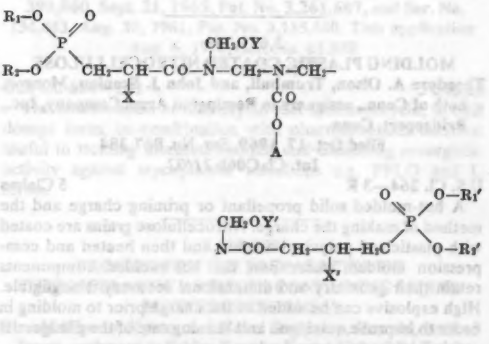
Filed Dec. 16, 1969, Ser. No. 885,645

Claims priority, application Switzerland, Dec. 24, 1968, 19236/68

Int. Cl. C07f *9/38*; D06c *27/00*

U.S. Cl. 260—932 **11 Claims**

Phosphorus compounds are provided which correspond to the formula



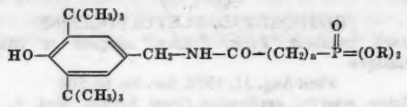
wherein each R is an alkyl, alkenyl or halogenalkyl radical, X and X′ each is a methyl radical or a hydrogen atom, Y and Y′ each is an alkyl radical or a hydrogen atom and A is an alkyl, halogenalkyl, hydroxyalkyl or a phenyl or benzyl group which both may be halogen substituted. The phosphorus compounds are manufactured from the corresponding phosphorus carboxylic acid amides and carbamates and formaldehyde. These compounds optionally together with a curable aminoplast precondensate are useful for flameproofing and creaseproofing of cellulose-containing fiber materials.

3,679,779
PHOSPHONIC ACID DIALKYL ESTERS

Helmut Huber-Emden; Karl Eschle, both of Basel, and Arthur Maeder, Therwil, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jan. 22, 1970, Ser. No. 5,148
Claims priority, application Switzerland, Jan. 30, 1969, 1460/69
Int. Cl. C07f 9/40
U.S. Cl. 260—943 10 Claims

The subject of the invention is phosphonic acid dialkyl esters of the formula



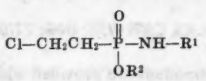
in which R denotes an alkyl radical with one to 18 carbon atoms and *n* denotes 1 or 2. These phosphonic acid dialkyl esters are used as antioxidants for plastics, especially for polypropylene, polyethylene and polyurethane, and rubber. The combined use of the phosphonic acid dialkyl esters with flameproofing agents, may increase the flameproofing action of the flameproofing agent. The use of the compounds according to the invention in combination with other antioxidants also may show advantageous effects.

3,679,780
N-SUBSTITUTED-P-(2-CHLOROETHYL)-PHOSPHONAMIDATES

David I. Randall, and Robert W. Wynn, both of Easton, Pa., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,579
Int. Cl. C07f 9/40
U.S. Cl. 260—959 6 Claims

Plant growth regulating compounds are N-substituted-P-(2-chloroethyl)-phosphonamidic esters of the formula:



wherein R^1 is halophenyl and R^2 is alkyl or haloalkyl. They are prepared by the reaction of 2-chloroethylphosphonohalidic esters with the appropriate haloaniline.

3,679,781
MOLDING PLASTIC COATED NITROCELLULOSE

Theodore A. Olson, Trumbull, and John J. Scanlon, Monroe, both of Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Oct. 17, 1969, Ser. No. 867,384
Int. Cl. C06b 21/02
U.S. Cl. 264—3 R 5 Claims

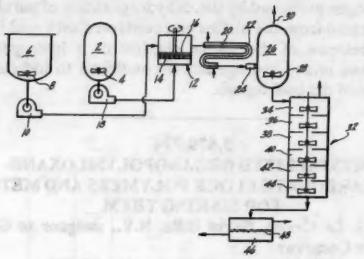
A hot-molded solid propellant or priming charge and the method of making the charge. Nitrocellulose grains are coated with plasticized polyvinyl acetate and then heated and compression molded whereupon the hot molded components retain their geometry and dimensional recovery is negligible. High explosive can be added to the charge prior to molding in order to improve quickness and burning rate of the charge.

3,679,782
MANUFACTURE OF GLOBULAR POWDER

Eugene A. Andrew, St. Louis, Mo., and Henry J. Halverson, St. Clair, Ill., assignors to Olin Corporation

Filed Nov. 20, 1969, Ser. No. 878,269
Int. Cl. C06b 21/02
U.S. Cl. 264—3 E 10 Claims

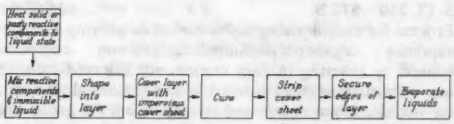
A method of preparing globular propellant powder wherein presized lacquer particles are entrained in a liquor suspending medium and forced to flow through a long section of tubing until the propellant grains are dewatered and rounded into spherical shape. The spherically shaped powder globules are then passed into a flash evaporator having a pressure lower than that in the dewatering and shaping conduit so that a portion of the solvent within the globules volatilizes. The remaining solvent is removed by passing the slurry through a final hardener consisting of several chambers. Each of these chambers are individually heated to increase the temperature of the slurry of powder granules as it moves through the column. The temperature gradient between adjacent chambers in the latter stages may be increased.



3,679,783
PROCESS FOR FORMING A THIN MICROPOROUS SHEET MATERIAL

John J. McGarr, Beverly, Mass., assignor to USM Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 683,015, Nov. 14, 1967, abandoned, which is a continuation-in-part of Ser. No. 500,155, Oct. 21, 1965, abandoned. This application Oct. 16, 1969, Ser. No. 867,986
Int. Cl. B29d 27/04
U.S. Cl. 264—53 19 Claims


Heat solid or pasty reactive components to liquid state
Mix reactive components & immiscible liquid
Shape into layer
Cover layer with impervious cover sheet
Cure
Strip cover sheet
Secure edges of layer
Separate liquids

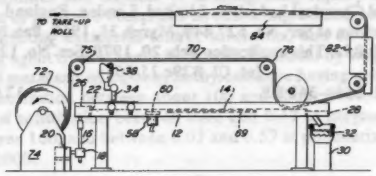
A process for forming a microporous body having improved uniformity and permeability in which a normally solid or highly viscous polymeric reactive material is heated to bring it to a freely fluid state, a liquid having no or only very limited solvent or swelling action on the polymeric material is dispersed to form an emulsion with the polymeric material as the continuous phase, the polymeric material is reacted to tough, solid, resilient, film-forming condition, the emulsion is solidified and the liquid is removed leaving spaces constituting openings or pores in the solidified material. Where thin cross section bodies are desired, the emulsion is formed into a thin layer on a casting surface with a cover on the face of the emulsion opposite the casting surface, the cover remains in place during solidification of the emulsion, and is separated from the solidified emulsion before removal of the liquid.

3,679,784

METHOD OF MAKING DECORATIVE ARTICLES FROM PLASTISOL

Karl M. Rosenberg, Philadelphia, Pa., assignor to Flo-Tech Corp., Wilmington, Del.

Continuation-in-part of Ser. No. 812,795, April 2, 1969, abandoned. This application July 23, 1969, Ser. No. 865,542
Int. Cl. B29d 7/02; B29c 25/00, 5/00
U.S. Cl. 264—73 7 Claims



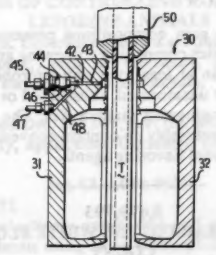
A method of making decorative articles from plastisol is disclosed. In one of its forms, the method is performed by placing bodies of liquid or semi-liquid plastisol of different color on the surface of a pool of liquid material immiscible with the plastisol and having a density in excess of the density of the plastisol. The bodies of plastisol are intermingled as they float on the pool to form a mass having a variegated marblelike appearance. The mass may then be gelled, or alternatively, fused, and then removed from the pool. One aspect of the disclosed method is a step of compressing ungelled plastisol prior to or during gelling to preclude the presence of bubbles in the finished article.

3,679,785

METHOD OF FORMING AN INTEGRAL ONE-PIECE PLASTIC CONTAINER AND CARRYING HANDLE

Roy W. Dike, Tempe, Ariz., assignor to Continental Can Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 250,058, Jan. 8, 1963, Pat. No. 3,441,172. This application May 17, 1968, Ser. No. 730,119
Int. Cl. B29c 17/07, 17/12
U.S. Cl. 264—98 2 Claims



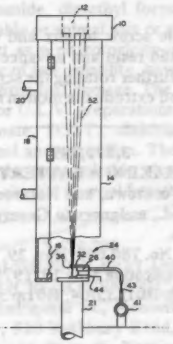
This disclosure relates to a method of forming an integral container and carrying handle by extruding a tube of plastic material, forming a first portion of the tube into an inverted generally U-shaped handle, forming another portion of the tube into a container body having a neck spanned by the handle, and removing waste material from between the handle and the neck to form the inner outline of the handle and form an opening of the neck.

3,679,786

METHOD AND APPARATUS FOR MELT SPINNING OF SYNTHETIC FILAMENTS

Hans Van Doornewaard, Greenville, S.C., and Henry G. Jackson, Guayama, P.R., assignors to Phillips Fibers Corporation

Filed May 21, 1970, Ser. No. 39,273
Int. Cl. B28b 3/20
U.S. Cl. 264—176 F 13 Claims



In melt spinning of synthetic filaments, a stream of gaseous fluid is withdrawn from a region adjacent the entrance to the conditioner tube so as to substantially eliminate undesired turbulence in the quench chamber.

3,679,787

ANTIBIOTIC PROCESS OF TREATMENT

Malcolm E. Bergy, Kalamazoo; Ross R. Herr, and Donald J. Mason, both of Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 731,679, May 17, 1968, abandoned, which is a continuation of Ser. No. 833,861, June 2, 1969, abandoned, Continuation-in-part of Ser. No. 517,453, Dec. 29, 1965, abandoned, which is a continuation-in-part of Ser. Nos. 398,060, Sept. 21, 1965, Pat. No. 3,261,687, and Ser. No. 134,843, Aug. 30, 1961, Pat. No. 3,155,580. This application Aug. 6, 1970, Ser. No. 61,858
Int. Cl. A61k 21/00
U.S. Cl. 424—181 3 Claims

The combination of lincomycin and spectinomycin, in unit dosage form, in combination with pharmaceutical carriers: useful in treating diseased animals and exhibiting synergistic activity against mycoplasma infections e.g. PPLO and L forms.

3,679,788

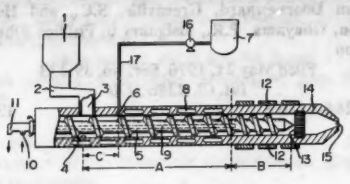
PROCESS FOR THE PREPARATION OF THERMOPLASTIC ARTICLES CONTAINING LIQUID MATTER UNIFORMLY

Hiroshi Kiyono, Kyoto, and Kohei Sugiyama, Ibaraki, both of Japan, assignors to Sekisu Kagaku Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan

Filed May 25, 1970, Ser. No. 40,054
Claims priority, application Japan, May 26, 1969, 44/41457
Int. Cl. D01f 1/02
U.S. Cl. 264—211 8 Claims

A process for the preparation of thermoplastic articles containing liquid matter uniformly, which comprises feeding thermoplastic resin into the extrusion cylinder of a screw type extruder through the feeding opening, rotating the screw to

transfer the resin maintained in an unmelted state, injecting the liquid matter into the unmelted resin through the at least one injection nozzle opening into the extrusion cylinder, continuously rotating the screw to mix and disperse the liquid matter in the unmelted resin and advance the mixture to the extruder outlet, and further rotating the screw to melt the mixture, and to knead and extrude the molten mixture.



3,679,789

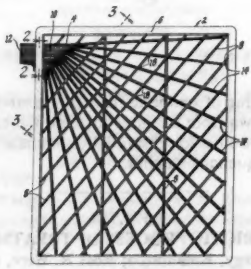
PROCESS OF MAKING A BATTERY PLATE GRID

Ellis G. Wheadon, Yorktown, and Norman L. Willmann, Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 780,068, Nov. 29, 1968, Pat. No. 3,556,854. This application May 18, 1970, Ser. No. 38,441

Int. Cl. H01j *35/04*; H01m *35/00*

U.S. Cl. 264—249 **2 Claims**



A process for making a battery plate grid, the grid being formed from a fan-like conductor and a grate-like nonconductor bonded one to the other by a plurality of fusion-interlocked joints.

3,679,790

METHOD OF FINISHING BOARDS OF VEGETABLE MATERIAL

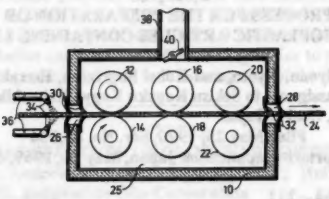
Alf Adolf Alfsen, 116, Riddarvagen, Osterskar, Sweden

Continuation of Ser. No. 689,450, Dec. 11, 1967, abandoned. This application June 12, 1970, Ser. No. 48,864

Claims priority, application Sweden, Dec. 12, 1966, 17032/66

Int. Cl. B29j *5/10*

U.S. Cl. 264—280 **4 Claims**



A method and an apparatus for finishing boards of vegetable material including the production of a sliding movement over at least one surface of the board. Specific apparatus elements are provided to effect the sliding movement including rotative and non-rotative structures. The method includes high temperature and high pressure treatment in combination with the production of a sliding movement on at least one surface of the board. The board may be treated after drying and upon both sides thereof simultaneously.

3,679,791

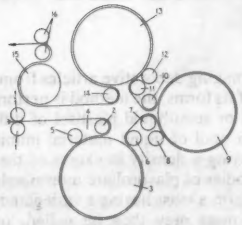
PROCESS FOR SHRINKING FILM

Grahame Melvin Reade, Harpenden, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 627,449, March 31, 1967, Pat. No. 3,570,052. This application Feb. 20, 1970, Ser. No. 12,994

Int. Cl. B29c *25/00*

U.S. Cl. 264—342 RE **12 Claims**



Heat-treating oriented film by feeding it to at least one matt surfaced rotating roll which is maintained at a temperature at which the film will shrink but below the melting point of the film and forcing the film against the roll while uniformly spreading it out on the roll.

3,679,792

DIALDEHYDE-CONTAINING ANTI-CARIES CHEWING GUM COMPOSITIONS

John H. Litchfield, Worthington, and Victor G. Vely, Columbus, both of Ohio, assignors to Wm. Wrigley Jr., Company, Chicago, Ill.

Filed Sept. 5, 1969, Ser. No. 855,763

Int. Cl. A61k *27/00*

U.S. Cl. 424—48 **10 Claims**

Unique chewing gum compositions possessing anti-caries activity characteristics comprising a chewing gum base having incorporated therein at least one anti-microbial agent comprising saturated or unsaturated, substituted or unsubstituted, conjugated or unconjugated dialdehydes. The chewing compositions can and preferably do contain conventional adhesive as well as conventional flavoring agents.

3,679,793

METHOD OF RAISING THE WHITE BLOOD CELL COUNT

Elton S. Cook, Cincinnati, Ohio, and Leo G. Nutini, Burlington, Ky., assignors to Stanley Drug Products, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 739,639, June 25, 1968,. This application Feb. 13, 1970, Ser. No. 11,299

Int. Cl. A61k *17/00, 27/00*

U.S. Cl. 424—95 **3 Claims**

A method of raising the white blood cell count in mammals by administering thereto a deproteinized extract from yeast and certain animal tissues such as brain, spleen and others, in such a manner as to cause the extract to enter the blood stream.

3,679,794

PROCESS FOR THE MANUFACTURE OF RAPIDLY DISINTEGRATING SOLID DOSAGE UNIT FORMS

Svend Asger Rud Bentholm, Nuland, and Wilhelm Engelinus Koenen, Oss, both of Switzerland, assignors to Organon Inc., West-Orange, N.J.

Continuation-in-part of Ser. No. 799,061, Feb. 13, 1969, abandoned. This application Sept. 17, 1971, Ser. No. 181,588

Int. Cl. A61j 3/10

U.S. Cl. 424—148 4 Claims

A solid dosage unit tablet or pill which is stable at high relative humidities and capable of disintegrating rapidly in the presence of moisture comprises an active ingredient, conventional tableting excipients and/or lubricants, and as a disintegrating agent from about 0.3 to about 3 percent by weight of an alkali metal salt of carboxymethylcellulose having a degree of polymerization between about 100 and about 2000, and a degree of substitution between 0.02 and 0.17 at polymerization degree 100, and between 0.02 and 0.57 at polymerization degree 2000.

ERRATUM

For Class 424—181 see:
Patent No. 3,679,787

3,679,795

ANTIINFECTIOUS COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

Pierre De Somer, Louvain, and Paul Claes, Heverlee, both of Belgium, assignors to Recherche Et Industrie Therapeutiques, R.I.T., Genval, Belgium

Filed June 4, 1970, Ser. No. 43,571

Claims priority, application Belgium, June 17, 1969, 30,722; June 17, 1969, 63,598

Int. Cl. A61k 27/00

U.S. Cl. 424—180 9 Claims

The invention relates to the preparation of antiviral polyacetalcarboxylic acids and to the physiologically acceptable salts thereof, said polyacetalcarboxylic acids being oxidized polysaccharides having at least 50 percent of the monosaccharide rings open, substantially all the open rings oxidized to the carboxylic acid state and substantially all the C-O-C linkages originally present in the original polysaccharide still intact.

3,679,796

METHODS OF CONTROLLING RODENTS AND LEPORINE ANIMALS

Gunter Hermann, Leverkusen, and Karl-Julius Schmidt, Wuppertal-Vohwinkel, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 8, 1969, Ser. No. 883,335

Claims priority, application Germany, Dec. 10, 1968, P 18 13 696.4

Int. Cl. A01n 9/36

U.S. Cl. 424—211 10 Claims

Methods of selectively combating and controlling rodents and leporine animals using certain phosphorus acid esters, i.e. phosphoric, phosphonic, thionophosphoric and thionophosphonic acid esters, or (alkyl and O-alkyl)-O-alkyl-O-[2-(N,N-di[alkyl, alkenyl and cyanoalkyl]-amino-methyl) and 2-(pyrrolidino, piperidino and morpholino)-methyl-4-(alkyl, alkylmercapto, alkylsulfoxyl, alkylsulfonyl, nitro, cyano, aminocarbonyl and chloro)-3,5 and/or 6-(optionally mono and di chloro, nitro and alkyl)-phenyl]-phosphoric, phosphonic, thionophosphoric and thionophosphonic acid esters, and the corresponding dimethyl sulfate quaternary ammonium salts thereof, which are known, which possess strong and selective rodenticidal properties, and which may be produced by conventional methods.

3,679,797

SINGLE-PHASE PESTICIDAL PREPARATIONS

Willem De Lange; Werner Duyfjes, and Willem Maas, all of Amsterdam, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,918

Claims priority, application Netherlands, Nov. 4, 1969, 6,917,222

Int. Cl. A01n 17/08

U.S. Cl. 424—211 15 Claims

A single-phase pesticidal U.L.V. preparation substantially consisting of a pesticide dissolved in isophorone, hexamethyl phosphoric acid triamide, dimethyl formamide or mixtures thereof, and a vegetable or animal wax or a hydrolysis product of the latter product as a phytotoxicity-reducing substance. The preparations are of low volatility, have a slight phytotoxicity and cause vary little leaf damage. The invention is of particular importance for U.L.V. preparations based on carbaryl, carbofuran, dimethoate, D.D.T., dieldrin, endrin, lindane, methoxychlor, tetrasul and tetradifon. The most suitable solvent is isophorone: the most suitable phytotoxicity reducing substance is wool fat alcohol or wool fat acid.

3,679,798

COMPOSITION COMPRISING ARYLAMINOOXAZOLINE AND ANTICHLOLIGENERIC AGENT

Rudolf Cilik, 214 LaFayette St., Kennett Square, Pa., and Jurg A. Schneider, 520 Rothbury Road, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

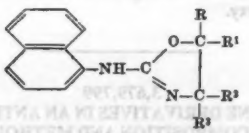
Filed Feb. 28, 1964, Ser. No. 348,291

Int. Cl. A61k 27/00

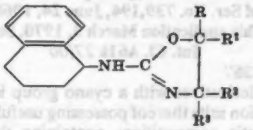
U.S. Cl. 424—265 32 Claims

17. A composition comprising one part by weight of an arylaminooxazoline and from about 0.5 to 30 parts by weight of a centrally acting anticholinergic agent, said arylaminooxazoline being selected from the group consisting of those of the following formulas and pharmaceutically acceptable acid addition salts thereof:

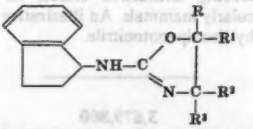
(1)



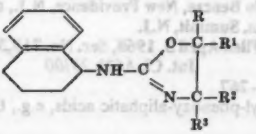
(2)



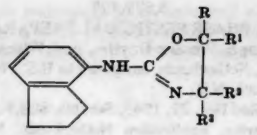
(3)



(4)

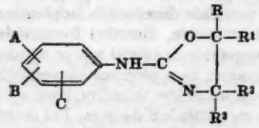


(5)



and

(6)



where in each of formulas (1) through (6) R, R^1, R^2 and R^3 are each separately selected from the group consisting of hydrogen and alkyl of 1 through 4 carbons with the total number of carbons in these four substitutents being 8; where in each of formulas (1) through (5), 1 through 3 hydrogen atoms of the moiety selected from the group consisting of naphthyl, partially reduced naphthyl and indanyl can be replaced with a member selected from the group consisting of halogen, alkyl of 1 through 4 carbons, alkoxy of 1 through 4 carbons, alkylthio of 1 through 4 carbons, trifluoromethyl and trifluoromethoxy; and where in formula (6) A is selected from the group consisting of hydrogen, alkyl of 1 through 4 carbons, alkoxy of 1 through 4 carbons and halogen; B is selected from the group consisting of alkyl of 1 through 4 carbons, alkoxy of 1 through 4 carbons and halogen; and C is selected from the group consisting of hydrogen, alkyl of 1 through 4 carbons, alkoxy of 1 through 4 carbons halogen, alkylthio of 1 through 4 carbons, alkoxyalkyl wherein the alkoxy portion has 1 through 2 carbons and the alkyl portion has 1 through 2 carbons, alkylamino of 1 through 2 carbons, dialkylamino where each alkyl group has 1 through 2 carbons, trifluoromethyl and trifluoromethoxy.

3,679,799
PIPERDINE DERIVATIVES IN AN ANTITUSSIVE COMPOSITION AND METHOD

Hans Herbert Kuhnis, and Denss Rolf, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 739,194, June 24, 1968, Pat. No. 3,551,431. This application March 3, 1970, Ser. No. 15,919
Int. Cl. A61k 27/00
U.S. Cl. 424—267 **2 Claims**

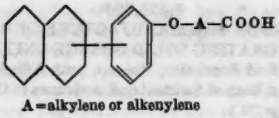
Piperidine derivatives with a cyano group in four-position and acid addition salts thereof possessing useful antitussive action; therapeutic compositions containing these piperidine derivatives or their pharmaceutically acceptable acid addition salts for producing antitussive effects in warm-blooded animals, particularly mammals. An illustrative embodiment is 1-(2-phenylethyl)isonipecotonitrile.

3,679,800
BICYCLOALKYL PHENOXYALIPHATIC ACID-COMPOSITIONS

William Laszlo Bencze, New Providence, N.J., assignor to Ciba Corporation, Summit, N.J.

Filed April 3, 1968, Ser. No. 718,374
Int. Cl. A61k 27/00
U.S. Cl. 424—267 **2 Claims**

Bicycloalkyl-phenoxy-aliphatic acids, e.g., those of the formula



A = alkylene or alkenylene

and their functional derivatives are hypocholesterolemic agents.

3,679,801
ARYL ESTERS OF α-CARBOXYARYLMETHYL-PENICILLINS

Kenneth Butler, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 830,516, June 4, 1969, abandoned, Continuation-in-part of Ser. No. 695,894, Jan. 5, 1968, abandoned. This application May 19, 1970, Ser. No. 38,903
Int. Cl. C07d 99/16
U.S. Cl. 424—271 **8 Claims**

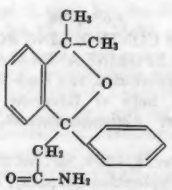
Arylchloro (and bromo) carbonyl ketenes, arylcarboxy ketene aryl esters derived therefrom, methods for their preparation and the use of the esters as acylating agents for the production of antibacterial agents; namely, aryl esters of α-carboxyarylacetyl derivatives of 6-aminopenicillanic acid, and by hydrolysis, the corresponding acid derivatives, are described.

3,679,802
METHOD OF PREVENTING CONVULSIONS

Roger Ratouis, Saint Cloud, and Jacques Robert Boissier, Paris, both of France, assignors to Roussel Uclaf, Paris, France

Filed Oct. 7, 1970, Ser. No. 78,961
Claims priority, application France, Oct. 8, 1969, 6934369
Int. Cl. A61k 27/00
U.S. Cl. 424—285 **2 Claims**

Novel anticonvulsant composition containing as the active ingredient, 3,3-dimethyl-1-phenyl-1-acetamidophthalanne of the formula



I

and to a novel method of preventing convulsions in warm-blooded animals.

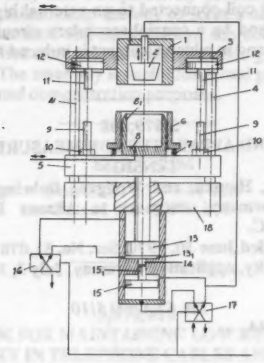
3,679,803
SHAPING PRESS, SPECIFICALLY FOR ARTICLES MADE OF PLASTIC

Jacques Palencher, Troyes, France, assignor to Lebocey Industrie, Troyes (Aube), France

Filed Aug. 25, 1969, Ser. No. 852,805
Claims priority, application France, Nov. 25, 1968, 175215
Int. Cl. B29c 17/04, 17/08
U.S. Cl. 425—289 **4 Claims**

The invention relates to a shaping press for articles made of plastic, comprising two members that act as a shaping enclo-

sure, inside which the material to be shaped is held at an appreciably uniform pressure strength, this strength being inde-



pendent of the means operating the moving of one of the mobile members of the shaping enclosure.

3,679,804

METHOD FOR TREATING GLAUCOMA WITH ALKYL GALLATES

Edgar Grunwaldt, New York, N.Y., assignor to Geigy Chemical Corporation, Greenburgh, N.Y.

Filed May 1, 1969, Ser. No. 821,099
Int. Cl. A61r 27/00
U.S. Cl. 424—308 2 Claims

Pharmaceutical compositions containing alkyl gallates are employed for treating glaucoma.

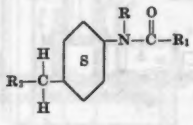
3,679,805

CERTAIN N-ACELYLCYCLOHEXY AMINES

Richard N. Knowles, Hockessin, Del., and Wilfred J. Arthur, Charleston, W. Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 532,544, March 1, 1966, abandoned. This application April 20, 1967, Ser. No. 635,305
Int. Cl. A01n 9/20; C07c 103/12
U.S. Cl. 424—320 13 Claims

N-Acylcyclohexylamines of the formula:



wherein

R is hydrogen, methyl or ethyl;

R_1 is hydrogen or alkyl of one through four carbon atoms; and

R_2 is cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, cyclononyl, bicycloalkyl, cycloalkylalkyl or tricycloalkyl.

Typical are N-acetyl-cis-4-cyclobutylmethylcyclohexylamine and N-acetyl-cis-4-cyclohexylmethylcyclohexylamine useful for repelling animals.

ELECTRICAL

3,679,806

ELECTRIC REDUCTION FURNACE

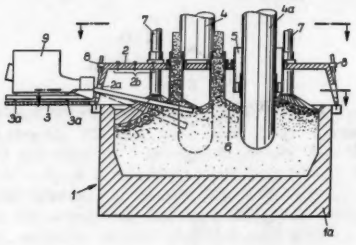
Johannes A. Reth, and Winifried H. Fettweis, both of Duisburg, Germany, assignors to Demag Elektrometallurgie GmbH, Duisburg, Germany

Division of Ser. No. 754,892, Aug. 23, 1968, Pat. No. 3,615,346. This application Dec. 15, 1969, Ser. No. 885,395

Claims priority, application Germany, March 12, 1968, D 55 615

Int. Cl. H05b 7/00; F27d 3/00

U.S. Cl. 13—9 4 Claims



In the production of metals and metal alloys from a charge of material containing at least one of manganese, silicon, and chromium, the charge of material is disposed within a closed combustion chamber and combustion air is directed into the closed space in a volume based on the conditions existing therein. A sufficient amount of combustion air is supplied to completely burn all of the CO in the reduction gases to form CO_2. The amount of combustion air supplied to the closed combustion space is in excess of the amount required to effect the complete combustion of the CO_2. Further, during the reduction operation, the charge is worked by stirring means or the like to assure the permeability of its surface for the release of the reduction gases.

3,679,807

DIE-FURNACE, ESPECIALLY FOR THE FABRICATION OF SINTERED PRODUCTS

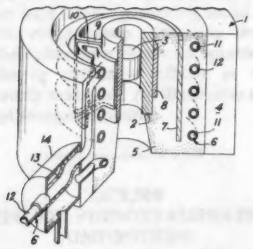
Jacques Carcey, Rives, France, assignor to Commissariat A L'Emergie Atomique, Paris, France

Filed May 10, 1971, Ser. No. 141,800

Claims priority, application France, May 12, 1970, 7017174

Int. Cl. H05b 5/12

U.S. Cl. 13—27 5 Claims



The die-furnace comprises a cylindrical die of refractory material, a banding assembly which surrounds the die externally and transmits a radial compressive force to the die by means of packing material, an induction heating device located within the packing material and constituted by a cooled primary coil connected to an external high-frequency power supply and by a coaxial secondary circuit which surrounds the die and in which a current is induced by the primary coil.

3,679,808

METHOD AND APPARATUS FOR MEASURING YARN TENSION

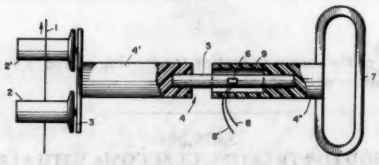
Dieter Rohner, Hausen, and Wolfgang Duhring, Erlenbach, both of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed June 30, 1970, Ser. No. 51,070

Claims priority, application Germany, July 3, 1969, P 19 33 749.6

Int. Cl. G01l 5/10

U.S. Cl. 73—144 10 Claims



A method and apparatus for measuring yarn tension during high-speed transport of the yarn. The method involves engaging the running yarn with a pair of coupled torque-imparting rollers or similar yarn-contacting surfaces and electrically measuring the resulting torque which is proportional to the yarn tension. The apparatus is a torsion bar assembly with the two yarn-engaging rollers radially mounted on an arm connected by an axle to one end of the torsion bar with means to electrically measure the torque of the torsion bar produced by the yarn tension while the other end of the torsion bar is held in a fixed position by any suitable means.

3,679,809

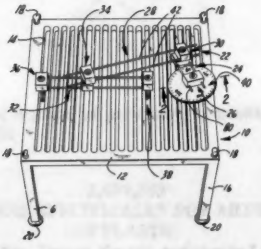
PIVOT LINKAGE ASSEMBLY KIT

Louis Wertman, Jamaica Estates, N.Y., assignor to Pic Design Corp., East Rockaway, N.Y.

Filed Dec. 2, 1970, Ser. No. 94,393

Int. Cl. G09b 25/02

U.S. Cl. 35—13 14 Claims



A pivot linkage assembly comprises a mounting grid and a plurality of precision ground linkage rods slidingly mounted in parallel pairs within a plurality of pivotal mounting blocks. Means are provided for pivotally mounting said mounting blocks on the slotted mounting structure by means of low-fric-

tion pivot sleeves. Several mounting blocks may be pivotally stacked on the same pivot sleeve with spacer means therebetween to insure low-friction relative rotation. Two or more blocks may also be operatively pivotally connected in free floating relationship thereby to form a variety of classic linkage mechanisms and combinations thereof. Precision angularly inscribed dials are provided to enable graphing of linkage motion. The assembly is useful for actual proto-models or for teaching and demonstration purposes.

ERRATUM

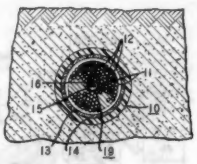
For Class 73—144 see:
Patent No. 3,679,808

3,679,810

SYSTEM FOR MAINTAINING LOW RELATIVE HUMIDITY IN TELEPHONE CABLES AND OTHER ENCLOSURES

Wendell Glenn Nutt, Phoenix, Md., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 99,820
Int. Cl. H01b 7/28
U.S. Cl. 174—16 R **5 Claims**



This disclosure describes a system for maintaining a reduced level of relative humidity in telephone cables. A moisture-permeable tube of, for example, polyvinyl chloride with a pulp-insulated pair within it is included in the cable core. The pulp insulation, being a natural desiccant, absorbs moisture that passes through the tube wall from the cable, thus holding down the relative humidity inside the cable. When the pulp is saturated, a longitudinal flow of air coupled with applied electrical current sufficient to heat the pair, purges the moisture from the tube. The pulp insulation is ready thereafter to absorb moisture anew.

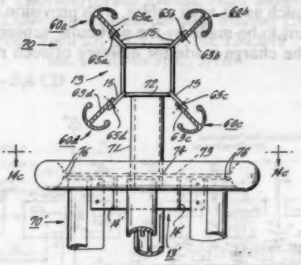
3,679,811

RIGID MULTICONDUCTOR BUS SYSTEM FOR USE IN HIGH CURRENT AND EXTRA ULTRA HIGH VOLTAGE SYSTEMS

Eugene Gorin, Greensburg, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Sept. 18, 1970, Ser. No. 73,491
Int. Cl. H02g 5/00
U.S. Cl. 174—72 B **10 Claims**

A rigid multiconductor bus system for conducting high currents in multi-phase EHV and UHV transmission system applications. The conductor system for each phase is comprised of a multiplicity of annular or semi-annular-shaped conductors having an integrally mounted flange. The conductors are arranged about spaced intervals along an imaginary cylinder. The integrally mounted flanges are radially aligned, and are mechanically joined at spaced intervals along the bus to "star type" extrusions to provide a rigid multiconductor structure. The integrally mounted flanges may further be employed to



mechanically and electrically join the conductors to tap members to couple cable or flat bus thereto.

3,679,812

ELECTRICAL SUSPENSION CABLE FOR WELL TOOLS

Nevyl G. Owens, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 13, 1970, Ser. No. 89,325
Int. Cl. H01b 7/22
U.S. Cl. 174—108 **3 Claims**

Representative embodiments are disclosed herein of new and improved armored electrical cables for supporting well tools in extra-deep well bores in which extreme geothermal temperatures may be encountered. To support the cable armor, the electrical conductors in these cables are enclosed within a tubular jacket which is formed of a helically wound metal strip having a rectangular cross section. In one embodiment of the invention, the individual electrical conductors are encased within thin-wall metal tubes and filled with a compacted powdered thermal and electrical insulating material for providing a suitable insulation capable of withstanding the most extreme temperatures which may be encountered. In another embodiment of the invention, the electrical conductors are sheathed in a special temperature-resistant plastic material to provide a cable for service at less extreme temperatures.

3,679,813

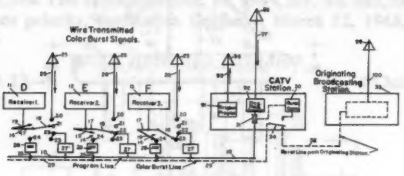
CATV TV OR SUBSCRIPTION TELEVISION OPERATIONS

Thomas A. Banning, Jr., Chicago, Ill., assignor to Frank D. Kenny

Continuation-in-part of Ser. Nos. 490,402, Sept. 27, 1965, and Ser. No. 559,494, June 22, 1966, and Ser. No. 645,843, May 19, 1967, and Ser. No. 661,681, Aug. 18, 1967. This application July 29, 1969, Ser. No. 845,743
Int. Cl. H04n 55/44
U.S. Cl. 178—5.1 **15 Claims**

This application discloses a system of pay or subscription television under which distantly emitted pay or subscription

television programs may be received at a local Community Antenna Television Station, also known and hereinafter referred to as a CATV Station, and re-distributed to subscribers connected to such CATV station by non-accessible land lines such as co-axial cables, with provision for requiring pre-payment to be made by the particular subscriber receiver covering the charge made for delivery of such re-distributed

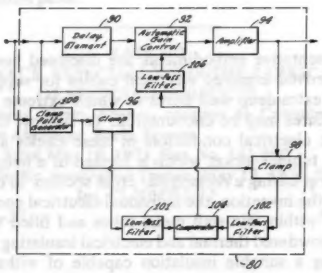


program to such subscriber and which pay or subscription system also includes line synchronizing signals. Otherwise stated this application discloses a system of television program distribution and reception combining a pre-pay or subscription television program with distribution thereof by and through a CATV station.

3,679,814
DROPOUT COMPENSATOR FOR COLOR TELEVISION

Ralph R. Barclay, Camarillo, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 16, 1970, Ser. No. 11,444
Int. Cl. H04n *5/14, 5/78, 9/02*
U.S. Cl. 178—5.4 CD **9 Claims**



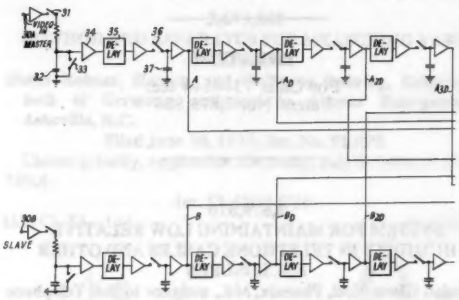
The present invention is directed to an improved dropout compensator for color television that delays a demodulated color video signal by a controlled time interval to provide a delayed color video signal. The luminance information of the delayed color video signal is separated therefrom and applied to an adder. The chrominance information in the delayed color video signal is applied to an automatic phase control to continuously maintain the phase of the chrominance information in phase with the demodulated color video signal. The luminance information and the chrominance information are then added in an adder to provide a dropout compensating signal having the same phase and amplitude as the demodulated color video signal.

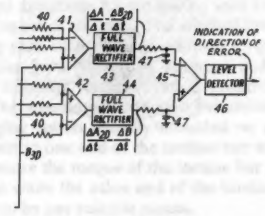
The amplitude of the delayed color video signal may be maintained substantially constant by an automatic gain control circuit.

3,679,815
TELEVISION CAMERA REGISTRATION

John David Lunn, 63, Camborne Road, Sutton, Surrey, England

Filed Feb. 1, 1971, Ser. No. 111,361
Int. Cl. H04n *9/08*
U.S. Cl. 178—5.4 M **3 Claims**





To detect misregistration in the outputs of two or more television camera tubes, the outputs of the tubes are subtracted and differentiated, the resultant being integrated and rectified, and a minimum then being detected in the amplitude of the integrated and rectified signal. The differentiation is achieved by delaying the signals and subtracting the delayed from the undelayed signals, the delay being an incremental delay to detect misregistration in the line scan direction or equal to one or more line periods for the field scan direction.

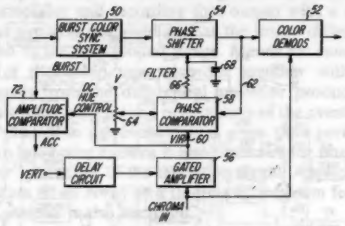
3,679,816
CONTROL APPARATUS FOR A COLOR TELEVISION RECEIVER

Jack Avins, Princeton, N.J., and Loren Robert Kirkwood, Indianapolis, Ind., assignors to RCA Corporation

Filed March 29, 1971, Ser. No. 128,704
Int. Cl. H04n *9/46*
U.S. Cl. 178—5.4 HE **8 Claims**

A color reference signal is inserted during the vertical blanking interval of a transmitted television waveform, for utilization by the described apparatus in automatically setting the hue and saturation of the display of an NTSC or a PAL receiver. The apparatus responds to the transmitted burst signal to set the frequency and phase of the sub-carrier oscilla-

tor of the receiver and, further, to the transmitted reference signal to correct any such inaccurate setting of phase as is



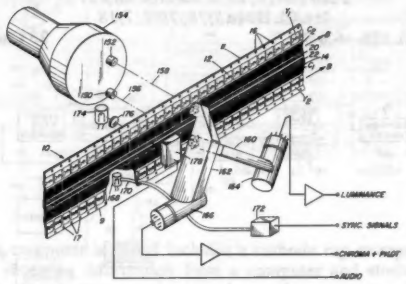
caused by adverse conditions of networking and transmission from the studio to the receiver.

3,679,817

RECORD MEDIUM FOR PICTURE INFORMATION

Peter C. Goldmark, Stamford, Conn., assignor to Columbia Broadcasting System, Inc

Filed April 20, 1971, Ser. No. 135,687
Int. Cl. G11b *7/08, 23/04;* **H04n** *5/84*
U.S. Cl. 178—5.4 CD **13 Claims**



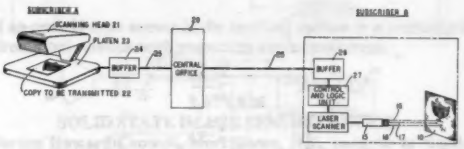
A record medium for use in the reproduction of picture information in the form of an elongated strip of recording material, such as photographic film, on which four sequences of mutually adjacent frames are disposed longitudinally in parallel relationship, each sequence representing a segment of picture information. Designating the lateral positions of the sequences across the film in ascending order from one to four, the frames of the first and third sequences are oriented for reading of their picture information with film motion in one longitudinal direction, and the frames of the second and fourth sequences are oriented for reproduction as the film is advanced in the opposite direction. In a preferred embodiment, the film contains two color programs, with one of the first and third sequences of frames containing monochrome representations of the luminance information of color pictures, and the other containing monochrome representations of the chrominance information of corresponding color pictures. Similarly, the second and fourth sequences of frames contain the luminance and chrominance information of a second color program. The film is packaged in a flip-over type cassette to facilitate playback of the film in either of the two longitudinal directions.

3,679,818

METHOD AND MEDIUM FOR PRODUCING COLOR IMAGES

Jeofry Stuart Courtney-Pratt, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed April 23, 1971, Ser. No. 136,849
Int. Cl. H04n *9/02, 5/76*
U.S. Cl. 178—5.4 CD **7 Claims**



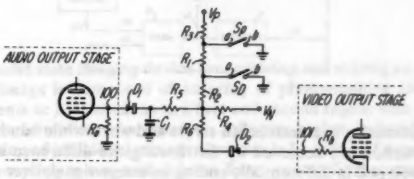
A film with a repeating color filter dot pattern on one side and an opaque coating such as bismuth metal on the other side, serves as a medium for reproducing color transparencies. Laser light having the same frequency as the dot color is directed through those dots constituting the desired image. The metallic coating behind each such dot is thereby evaporated, leaving the dot color unaffected. Illumination from the metal side produces the desired projected image. The image may also be viewed in reflected light by placing the film against a white background sheet.

3,679,819

VIDEO BLANKING AND SOUND MUTING CIRCUIT EMPLOYING GROUNDED TUNER SWITCHES

Perry Charles Olsen, and Pak Chong Tang, both of Indianapolis, Ind., assignors to RCA Corporation

Filed Feb. 3, 1971, Ser. No. 112,223
Int. Cl. H04n *5/44*
U.S. Cl. 178—5.8 R **9 Claims**



A switching circuit, dependent solely on the value of fixed impedances and supplied direct current voltages, blanks the picture and mutes the sound of a television receiver during its channel selection tuning, either manually or automatically by remote control. The circuit is a modification of that described in our concurrently filed application entitled "VIDEO BLANKING AND SOUND MUTING CIRCUIT" (Ser. No. 112,178), in its rearrangement of resistor components and utilization of a pair of grounded switches.

3,679,820

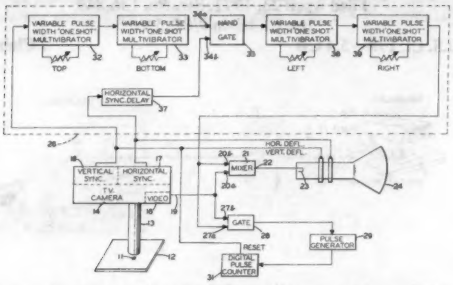
MEASURING SYSTEM

Liber J. Montone, Reading, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Jan. 19, 1970, Ser. No. 3,628
Int. Cl. H04n *7/02*
U.S. Cl. 178—6 **7 Claims**

Dimensional measurement of a pattern is achieved by televising the pattern and displaying the pattern on a television monitor. A special effect or measuring raster is generated and superimposed upon the pattern in such a manner that the raster overlaps at least one dimension of the pattern to be

measured. By means of a suitable pulse generator and gating circuit, a series of uniformly timed pulses are produced in timed response to the coincidence of (a) the video signal of the pattern exceeding a fixed threshold value, and (b) the



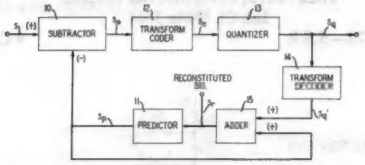
electronic waveform representing the special effect raster exceeding a nominal value. Periodically, the pulses produced are counted and numerical value commensurate therewith is displayed.

3,679,821

TRANSFORM CODING OF IMAGE DIFFERENCE SIGNALS

Manfred Robert Schroeder, Lower Saxony, Germany, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed April 30, 1970, Ser. No. 33,382
Int. Cl. H04n 7/12
U.S. Cl. 178—6 **2 Claims**



Immunity to transmission errors and worthwhile bandwidth reduction are achieved by distributing the difference signal, developed in differentially coding an image signal, over a spatially large interval or area, and transmitting the coded distributed signal instead of the image or differential signal. Line or frame image difference signals are, accordingly, dispersed by transformation prior to coding, e.g., by quantizing, and transmission, preferably by means of the Fourier, Hadamard, or other unitary matrix transforms, to "scramble" them relatively homogeneously in the domain of the transformed variable. Each transmitted image element thus represents a weighted sum of many or all of the elements of the corresponding line or frame. Simpler coding and other economies are achieved, particularly for relatively slowly varying sequences of images.

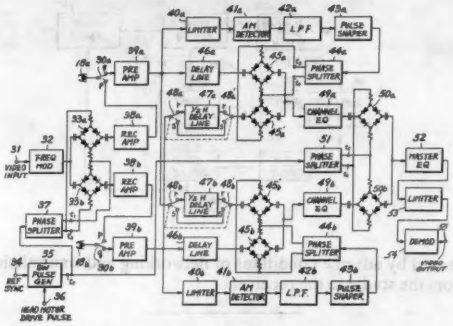
3,679,822

SIGNAL COMPENSATION SYSTEM IN RECORDING AND REPRODUCING APPARATUS

Yoshiyo Wada; Hisao Kinjo, both of Yokohama, and Keigo Okana, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa-ku, Yokohama, Japan

Filed May 22, 1970, Ser. No. 39,758
Claims priority, application Japan, May 24, 1969, 44/39954
Int. Cl. G11b 5/82, 21/04; H04n 5/78
U.S. Cl. 178—6.6 DO **10 Claims**

The system compensates for an absence of a reproduced signal in one channel with a portion of a reproduced signal in another channel. The compensating signal contains its information which is interrelated with that of the signal absence



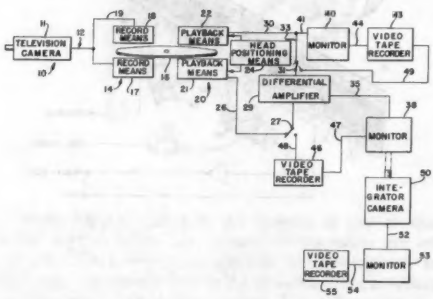
portion. The compensation is performed by a switching pulse having its width corresponding to an interval of the signal absence portion.

3,679,823

DIFFERENTIAL TIME TELEVISION SYSTEM

Matthew J. Corrigan, Jr., deceased, late of Willoughby, Ohio (by Sandra Lee Corrigan, executrix), assignor to Electronic Products Corporation, Cleveland, Ohio

Filed Nov. 9, 1970, Ser. No. 88,027
Int. Cl. H04n 5/78, 7/02, 7/18
U.S. Cl. 178—6.6 DD **23 Claims**



A system for providing a signal which represents the change or displacement in an event or occurrence in a given time period wherein the reference image is continuously updated. In one embodiment, the output from a television system is stored in such a manner that it may be retrieved to provide a pair of output signals. One of the retrieved output signals represents the occurrence of an event at a given time, while the other output signal, which is simultaneously retrieved with the first output signal, represents the occurrence of the event at a time different from the time of the occurrence of the even indicated by the first output. Means are disclosed for subtracting the two retrieved output signals to provide a differential output signal which represents the change in the event during the time corresponding to the difference in time of the occurrence represented by the first retrieved output signal and the second retrieved output signal. In a preferred embodiment, a television camera provides an output signal which is recorded on both sides of a video recording disc. Playback heads, capable of adjustment relative to each other, are offset relative to the registration of the record heads so that the output signals from the first playback head and the second playback head, when subtracted, effectively represent the change in the event

over the period of time determined by the playback head offset. Means are disclosed for adjusting the relative positions of the playback heads. Auxiliary means are also disclosed for monitoring the output of the playback head and recording the monitored output. Means for monitoring the output from the differential amplifier and recording that output with a video tape recorder are also disclosed so that the image difference may be added to the background image. Means for summing the output of the video tape recorder together with the recorded signals from the differential amplifier produce an image which has the background information of the event, but wherein the change in the event over a given time period is enhanced. An integrator camera is also disclosed for integrating the "snow" noise out of the television signal. Application of such a system to an X-ray or a fluoroscopic system for the treatment of patients is also disclosed.

3,679,824

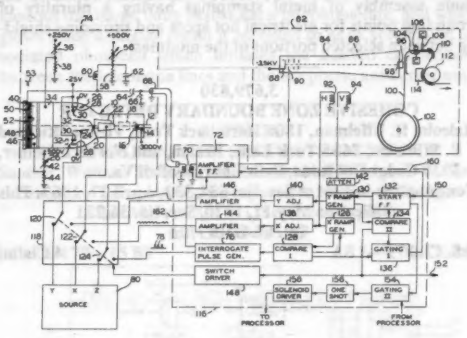
FACSIMILE SYSTEM

Charles B. Gibson, Jr., Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed May 4, 1970, Ser. No. 34,176

Int. Cl. H04n *1/30, 5/02, 5/84*

U.S. Cl. 178—6.7 R **13 Claims**



A computer terminal includes a cathode ray storage tube for receiving information from a computer and storing the same for continuous viewing. A copying apparatus is employed for making a permanent copy of the information presented on the cathode ray storage tube screen, such copying apparatus including means for scanning a sensitized surface, later suitably developed to provide the permanent copy. Read out circuit means effects simultaneous scanning of the copying apparatus and the cathode ray storage tube at a relatively slow rate compatible with the scanning capability of the copying apparatus, while at the same time the cathode ray storage tube's electron beam is pulse modulated wherein each pulsation thereof has a duration shorter than necessary to write information on the storage tube. The resultant signal produced at the storage tube target is coupled to the copying apparatus to duplicate the information stored on the cathode ray storage tube screen.

3,679,825

APPARATUS AND INFORMATION PROCESSING METHODS FOR A TRACKING SYSTEM TRACKER UNIT

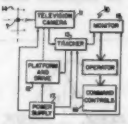
Richard B. Kuhn, Columbus, Ohio, assignor to North American Aviation, Inc.

Filed Oct. 12, 1964, Ser. No. 403,397

Int. Cl. H04n *3/00*

U.S. Cl. 178—6.8 **4 Claims**

This invention relates generally to object tracking, and particularly concerns apparatus and information processing methods for a tracker unit that may be advantageously utilized in a tracking system to establish and maintain the viewing axis



of an optical-type sensor in the tracking system in a prescribed directional relation with respect to a selected target.

3,679,826

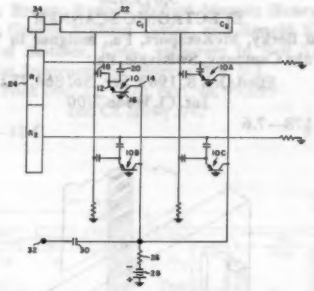
SOLID STATE IMAGE SENSING DEVICE

Merton Howard Crowell, Morristown, N.J., assignor to North American Philips Corporation, New York, N.Y.

Filed July 6, 1970, Ser. No. 52,438

Int. Cl. H04n *5/30*

U.S. Cl. 178—7.1 **4 Claims**



A solid state imaging device for receiving and storing an optical image is composed of an array of photosensitive diode elements or *p-n* junctions as a first and second region with the further formation of a common collector region. coincident selection of individual storage elements is by virtue of capacitive coupling to row and column lines, and cyclical scanning devices provide a stored charge on the *p-n* junction which is reduced in proportion to the totality of photons incident upon the storage device. Suitable outputs upon recharging are derived from the common collector region. The central or second region is connected to a point of reference potential such as ground for reducing the effect of the capacitive coupling between accessing wires and output leads by virtue of the electrostatic shielding provided by the grounded second region.

3,679,827

OPTICAL APPARATUS FOR CONTINUOUS TELEVISION FILM PROJECTION SYSTEM

Charles D. Boltz, Jr., Greenwood, Ind., assignor to RCA Corporation

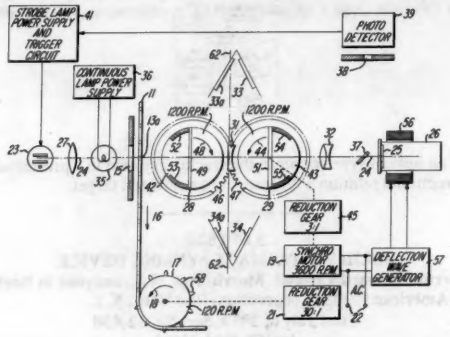
Filed March 2, 1971, Ser. No. 120,075

Int. Cl. H04n *1/04*; G03b *41/02*

U.S. Cl. 178—7.2 **10 Claims**

Two partially light transmissive and partially light reflective light-forwarding devices in the main optical path between the film and a camera tube are rotated so that a light replica of a film frame is transmitted through the devices when the frame is in the center of the film gate and other light replicas are

reflected from one device to the other by way of stationary reflectors on opposite sides of the main optical path and



thence to the camera tube when the frame has just completely entered and is about to leave the gate, respectively.

3,679,828

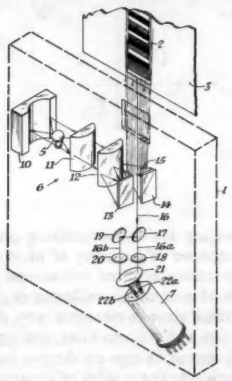
ELECTRONIC SCANNER

Raymond Becky, McKeesport, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Oct. 8, 1969, Ser. No. 864,752

Int. Cl. H04n 7/00

U.S. Cl. 178—7.6 **14 Claims**



This disclosure relates to a static type of opto-electronic scanner for sensing the coded markings of an information field. The scanner includes a source of radiant energy for illuminating the information field, an optical system for directing radiant energy onto the information field and for resolving received radiant energy from the information field into separate images and an electronic pickup means for sampling and scanning the separate images to produce video signals in accordance with the coded markings of the information field.

3,679,829

ELECTRONIC CHASSIS ASSEMBLY FOR A TELEVISION RECEIVER

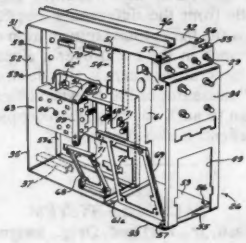
Richard J. Hofmeister, 802 E. Crabtree Drive, Arlington Heights, Ill., and Edward A. Salners, 700 Elderberry Lane, Mount Prospect, Ill.

Filed Nov. 27, 1970, Ser. No. 92,997

Int. Cl. H04n 5/64; H02b 9/00

U.S. Cl. 178—7.9 **8 Claims**

A television receiver including a cabinet housing with a front viewing face having an electronic chassis assembly movably mounted therein on which to mount instrumentalities including electronic modules in the form of printed circuit boards. The chassis assembly includes a plurality of enclosing wall portions defining an accessible internal cavity, one wall portion being pivotally mounted to provide additional access to the cavity, and a plurality of interconnected internal plates providing mounting surfaces and electrical shielding for the



instrumentalities Grounding terminal means are separately mounted or integrally formed on the mounting surfaces for connecting and grounding the electronic modules to the chassis assembly. High radiation type electronic modules include a frame assembly of metal stampings having a plurality of grounding points for electrical hot spots and providing shielding between selected portions of the modules.

3,679,830

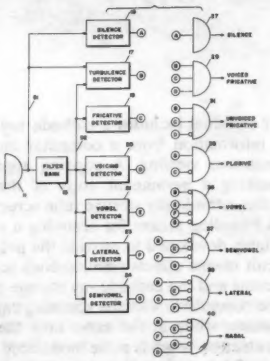
COHESIVE ZONE BOUNDARY DETECTOR

Malcolm R. Uffelman, 1808 Horseback Trail, Vienna; Richard E. Williams, 2605 Tack Lane, Reston, and Norbert Kleiner, 3030 Cedar Hill Road, Falls Church, all of Va.

Continuation-in-part of Ser. No. 634,332, April 27, 1967. This application May 11, 1970, Ser. No. 36,221

Int. Cl. G10l 1/02

U.S. Cl. 179—1 SA **4 Claims**



A speech segmenting device having a set of detectors which are activated by various combinations of energy distribution relative to a frequency scale such that continuous speech can be divided into repeatable patterns for use in a speech recognition process. These patterns called cohesive zones are naturally occuring segments or components of speech which are repeatable from speaker to speaker.

3,679,831

MULTI-LINE COUPLING SYSTEM

Elmer C. Bonsky, Long Beach, Calif., assignor to T. A. D. Avanti, Inc., Paramount, Calif.

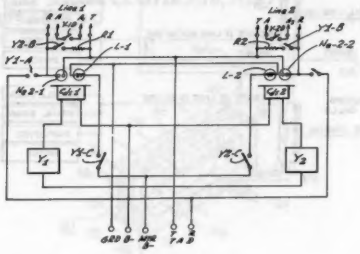
Filed Oct. 16, 1970, Ser. No. 81,428

Int. Cl. H04m 11/10

U.S. Cl. 179—2 C **4 Claims**

An improved system and network is provided for coupling a unit, such as an electronic telephone answering unit, to a mul-

tiplicity of telephone lines. The coupling is achieved by the system in a manner such that no load is imposed on any of the telephone lines until a ringing signal is received, at which time the coupling system of the invention serves to connect the telephone answering unit to the telephone line on which the ringing signal is received and, at the same time, to impose a "busy" connection to the other telephone lines so long as the telephone answering unit is occupied. The coupling system of the invention includes an optical relay circuit which includes a gaseous discharge lamp across each telephone line, and which glows when a ringing signal is received so as to activate an associated photocell which initiates the desired connections between the telephone lines and the telephone answering unit.



3,679,832

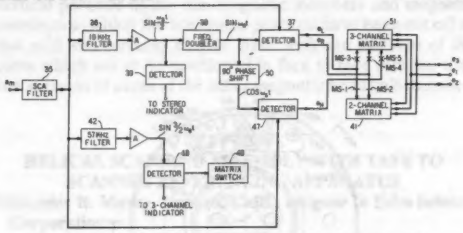
THREE-CHANNEL FM STEREO TRANSMISSION

Samuel Walters Halpern, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 23, 1971, Ser. No. 127,286

Int. Cl. H04h *5/00*

U.S. Cl. 179—15 BT **11 Claims**



An FM stereo system wherein the composite baseband transmission signal comprises three independent audio signals added together to obtain a sum signal; three double-sideband, amplitude-modulated, suppressed-carrier signals, each corresponding to one of the audio signals and spaced one hundred twenty degrees apart in phase; a conventional phase reference pilot signal; and a second, mode switching, pilot signal that comprises the third harmonic of the phase reference pilot. The second pilot signal assures three-channel receiver compatibility with a monophonic or two-channel stereophonic broadcast.

3,679,833

LOUDSPEAKER SYSTEM

Kiyoshi Inoue, 3-16-8 Kamiyoga, Setagaya-ku, Tokyo-to, Japan

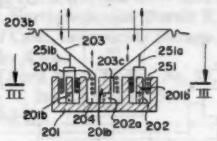
Filed July 16, 1969, Ser. No. 842,161

Claims priority, application Japan, July 18, 1968, 43/50692

Int. Cl. H04r *3/12*

U.S. Cl. 179—1 GP **13 Claims**

A loudspeaker system having an electrooacoustical transducer and a sound-propagating member with at least a principal sound-emitting axis. The sound director is movable to swing the axis through an angle to its normal position and thereby change the sound distribution accordingly. Stereophonic effects and changes in the quality of the tone



(expression) are audible to the listener. The angle control may be effected independently of the electrical signal source or in dependence thereupon.

3,679,834

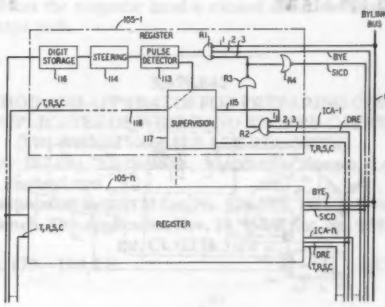
BYLINK CIRCUIT

Edwin Julius Braun; Rodney Robert Maxon; Henry August Meise, Jr.; George William Taylor, and Ronald Kirk Witmore, all of Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 99,899

Int. Cl. H04q *3/42*

U.S. Cl. 179—18 C **11 Claims**



A switching system is disclosed having improved bylink facilities for interconnecting a calling trunk circuit with an idle digit register. The bylink comprises a single conductor that is connected to all trunk circuits and to all registers. The registers and the trunk circuits have gating elements which are selectively enable by the system controller so that only a single trunk circuit and a single register may be connected signalwise at a time by the bylink bus. If a dial pulse is received prior to the time a bylink path is established, the trunk is connected to a busy tone source and the call is not completed.

3,679,835

CAMP-ON BUSY CHECKING AND MONITOR CIRCUIT

Klaus Gueldenpfennig, Penfield; Uwe A. Pommerening, and Stanley L. Russell, both of Webster, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

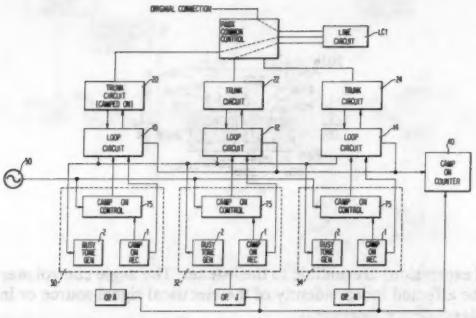
Filed March 5, 1971, Ser. No. 121,432

Int. Cl. H04m *3/42*

U.S. Cl. 179—27 FD **10 Claims**

Camp-on busy checking and monitor circuit which permits only a single line to camp-on a given line at one time and limits

the total number of camp-on connections by applying a tone to the loops which are associated with the connection desiring



to be camped on and monitoring all of the other loops to see if the tone returns in one of those loops.

3,679,836

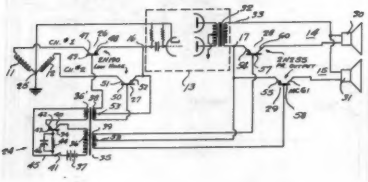
KEYED STEREOPHONIC TRANSMISSION SYSTEM

Richard S. Svorec, 824 36th St., South Bend, Ind.

Continuation of Ser. No. 388,979, Aug. 8, 1964, abandoned. This application June 19, 1969, Ser. No. 834,748

Int. Cl. H04h *5/00*

U.S. Cl. 179—15 BT **2 Claims**



A stereophonic transmission system having two sources of audio signals in which the audio signal of an ultrasonic frequency is keyed in opposite phase for periods of substantially one-half cycle of said frequency to derive the respective trains of pulses amplitude-modulated by said audio signals and displaced in phase relative to each other by the width of the pulses. The trains of pulses are super-imposed and admitted simultaneously to the input of the transmission channel and subsequently separated into the pulse trains at the output of the transmission channel.

3,679,837

INTERCOMMUNICATION SYSTEM

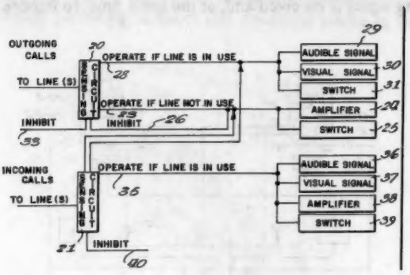
Zvie Liberman, c/o Talk-A-Phone Company, 5013 N. Kedzie Ave., Chicago, Ill.

Filed May 8, 1969, Ser. No. 823,009

Int. Cl. H04m *9/00*

U.S. Cl. 179—37 **3 Claims**

An intercommunication system with multiple stations using a balanced two-wire connection between stations. The connections float when not in use and are connected with a reference potential when in use. The stations have sensing



means which respond to the condition of the connections and control the operation during initiation or reception of a call.

3,679,838

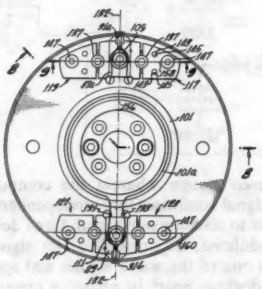
VIDEO TAPE SCANNER WITH ADJUSTABLY MOUNTED TRANSDUCERS PROVIDING CHORDAL ADJUSTMENT

Guido Salcedo, San Jose, Calif.; Jimmy J. Graves, deceased, late of Redwood City, Calif., and Marlene D. Graves, heir, Alameda, Calif., assignors to Echo Science Corporation

Continuation-in-part of Ser. No. 887,863, Dec. 24, 1969, abandoned. This application Feb. 19, 1970, Ser. No. 12,621

Int. Cl. G11b *5/56*

U.S. Cl. 179—100.2 CA **26 Claims**



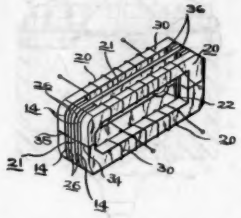
A video tape scanner having a plurality of record-reproduce heads slideably mounted on a rotatable disk. Each head is mounted on a shoe wedged between a pair of positioning blocks which are flexibly connected to respective anchoring blocks attached rigidly to the disk. A split sleeve, recessed in an opening within the rotatable disk forms the flexible connection between each positioning block and its associated anchoring block. The sleeve has a slightly tapered internal thread into which a similarly tapered screw is turned so as to flex the sleeve. By advancing or retarding the screws in both sleeves the flexure of the sleeves is changed, thereby moving the positioning blocks on both sides of the head so as to shift the position of the head which is between them.

3,679,839

TWO TRACK MULTIPLE ELEMENT MAGNETIC HEAD

Toshi Suzuki, Kamakura, and Tsutomu Nishijima, Yokohama, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Division of Ser. No. 780,393, Dec. 2, 1968, Pat. No. 3,545,077. This application July 22, 1970, Ser. No. 57,155
Claims priority, application Japan, Dec. 4, 1967, 42/77390
Int. Cl. G11b 5/16, 5/28
U.S. Cl. 179—100.2 C 4 Claims



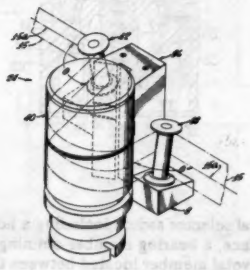
A multiple-element magnetic head comprising a plurality of magnetic head half-members arranged in face to face relation with each other at opposing end surfaces, with magnetic gaps being formed between them. Such magnetic head half-members are each made by holding non-magnetic members of substantially inverted U-shape each including a horizontal portion and oppositely disposed vertical portions between magnetic members identical in shape and configuration with said non-magnetic members, holding the assembly between substantially U-shaped cores including a horizontal portion and oppositely disposed vertical portions, cutting off said horizontal portions of said non-magnetic members and said magnetic members while leaving said oppositely disposed vertical portions, and grinding end surfaces of said oppositely disposed vertical portions of the non-magnetic members and magnetic members at which the horizontal portions have been cut off so that said end surfaces may be flush with end surfaces of the cores which are to be positioned in face to face relation with end surfaces of cores of the other magnetic head half-member.

3,679,840

HELICAL SCANNING ASSEMBLY WITH TAPE TO SCANNER REFERENCING APPARATUS

Alexander R. Maxey, Newark, Calif., assignor to Echo Science Corporation

Division of Ser. No. 738,250, June 19, 1968, Pat. No. 3,516,146. This application March 19, 1970, Ser. No. 19,547
Int. Cl. G11b 5/52, 5/56
U.S. Cl. 179—100.2 T 20 Claims



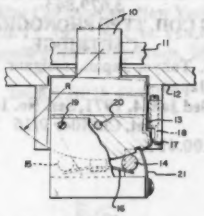
A scanning assembly for a helical-wrap, drum-type, video tape machine includes entry and exit tape guides and a drum assembly interconnected by a bracket. The drum assembly includes upper and lower cylindrical male guides which butt adjustably against an elongate reference way on the bracket to align the axis of the drum assembly. The entry and exit guides are each mounted on the bracket oblique to the drum assembly axis by a pin which extends from the guide into an oversize bore in the bracket and is held in place by adhesive.

3,679,841

MAGNETIC TAPE HEAD SKEW ADJUSTMENT

Zoltan L. Herger, Northglenn, and Dennis R. Olmsted, Westminster, both of Colo., assignors to Storage Technology Corporation, Boulder, Colo.

Filed April 30, 1970, Ser. No. 33,366
Int. Cl. G11b 5/56
U.S. Cl. 179—100.2 CA 1 Claim



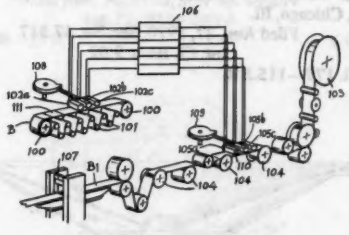
Skew adjusting apparatus for a magnetic tape unit includes a right angle mounting plate for the magnetic head with one surface being curved with a radius of curvature having a center line coincidental with the center line of the tape path. The curved surface is biased toward two guiding pins. The mounting plate moves with the curved surface riding on the pins so that the magnetic head is rotated about the center line of the tape path.

3,679,842

METHOD AND APPARATUS FOR PREPARING COPIES OR DUPLICATES OF WIDE BAND RECORD CARRIERS ON WHICH SIGNALS ARE RECORDED

Jahangir M. Ahy, 13 Duke St., Manchester Square, London W.I, England

Continuation-in-part of Ser. No. 583,898, Oct. 3, 1966, abandoned. This application Nov. 10, 1969, Ser. No. 875,101
Int. Cl. G11b 5/86
U.S. Cl. 179—100.2 E 3 Claims



This invention provides a method and apparatus for preparing duplicates of wide band record carriers on which signals of a continuous program are recorded in a hundred or more track sections arranged side-by-side across the width of the band and generally parallel to the length of the band, the track sections being separate and parallel to the length of the band or being made continuous either by arranging them in a helical path inclined slightly to the length of the band or by arranging them parallel to the length of the band and interconnecting them by inclined sections so that continuous reproduction is possible. Such recordings have a playing time of several hours.

The method and apparatus herein described employ multiple playback heads past which the master wide band record,

which may be in the form of an endless loop provided with a length of blank band between the ends of the track sections, is fed, and multiple recording heads respectively energized by the corresponding one of the playback heads and past which a copy band is fed, whereby the track sections may be duplicated simultaneously. The heads may be staggered along the paths of the respective bands and may, where the track sections are made continuous, follow tracking paths so that the duplicates have the track sections recorded thereon as a continuous program corresponding to the recording on the master wide band record being copied. By means of the invention the duplicates of the master recordings can be produced quickly and economicaly.

3,679,843

MOVING COIL TYPE PHONOGRAPH PICKUP CARTRIDGE

Masanobu Cho, Tokyo, Japan, assignor to Micro Seiki Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1971, Ser. No. 103,438

Int. Cl. H04r 9/16

U.S. Cl. 179—100.41 K **2 Claims**

A moving coil type phonograph pickup cartridge consisting of a magnet assembly containing a permanent magnet therein and a stylus assembly detachably mounted on the magnet assembly and including an armature with coils wound thereon. The armature is substantially of a V-shape having two leg portions which are at right angles to each other. The coils are wound on the leg portions. By this construction, a vertical tracking angle of a cantilever arm relative to a record disc can be reduced.

3,679,844

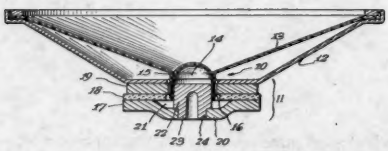
MOVING COIL LOUDSPEAKER USING THIN MAGNET

John J. Derkacz, Chicago, Ill., assignor to Alpha Products, Inc., Chicago, Ill.

Filed Aug. 27, 1970, Ser. No. 67,517

Int. Cl. H04r 9/02

U.S. Cl. 179—115.5 R **4 Claims**



A field assembly for a loudspeaker having a base plate, a front plate and a permanent magnet sandwiched therebetween, a cylindrical post being secured to the center of the base plate in such a manner as to leave a gap for the movements of a voice coil therein. The base plate is provided with an embossment creating additional space for voice coil travel. Instead of an embossment integral with the base plate, a separate disc member with a peripheral flange may be used.

3,679,845

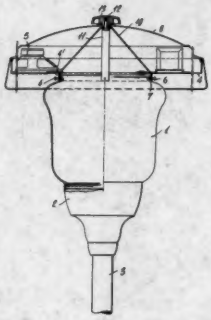
LIGHTING UNIT INCORPORATING LOUDSPEAKERS

Giovanni Geloso, deceased, late of Corso di Porta Romana 76/2, Milan, Italy (by Gianfranca Domini, sole heir)

Filed May 19, 1970, Ser. No. 38,802

Int. Cl. H04r 1/02

U.S. Cl. 179—146 R **8 Claims**



A light unit incorporating, above, a sound distribution unit separate from the lamp and protected by an upper cap designated to also form the sound box of the aforementioned sound distribution system. The elements are assembled in such a way as to permit easy access to the sound distribution system independently of the lamp.

3,679,846

GEAR CHANGE SWITCH WITH MULTI-MOTION CLOSURE ACTUATOR

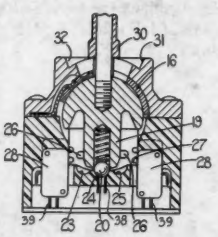
Stanley Bernard Dillon, Greenford; Dorian Farrar Mowbray, Burnham, and Kenneth Albert Walters, Kamp, London, all of England, assignors to C.A.V. Limited, Birmingham, England

Filed Dec. 3, 1970, Ser. No. 94,742

Claims priority, application Great Britain, Dec. 10, 1969, 60,186/69

Int. Cl. H01h 21/22

U.S. Cl. 200—6 A **11 Claims**



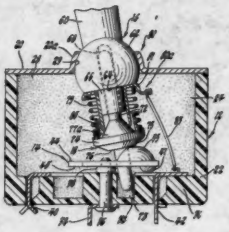
An electrical selector switch including a housing defining a spherical surface, a bearing member defining a spherical surface, and a pivotal member located between the surfaces. The pivotal member carries a spring loaded ball which engages with the surface on the housing to urge a spherical surface on the pivotal member into contact with the spherical surface on the bearing member. The bearing member being shaped to operate switches in selected positions of the pivotal member.

3,679,847

THREE POSITION PIVOTAL SWITCH WITH IMPROVED SPRING BIASED JOYSTICK ACTUATOR AND CONTACT

Ronnalee House, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 26, 1971, Ser. No. 175,177
Int. Cl. H01h 25/04, 19/46, 21/50
U.S. Cl. 200—6 A 6 Claims



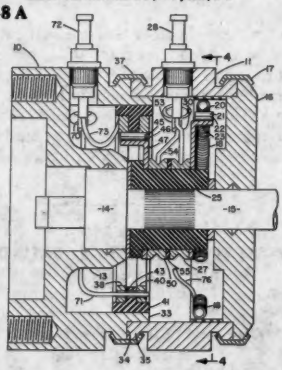
In a preferred form, this disclosure relates to a light switch assembly having a housing means carrying a stationary ground terminal and a plurality of stationary terminals positioned in a spaced relationship about the ground terminal, a pivotally supported bridging contact member, and a swivelly supported actuator means. The bridging contact member is pivotally supported upon the ground terminal for movement to different positions to bridge different ones of the stationary terminals and the ground terminal. The actuator means is swivelly supported by the housing means for pivoting the bridging contact member to different positions. Further, the actuator means includes a plunger member which is spring biased into engagement with a dome portion on the bridging contact member. The plunger member rolls in engagement with the dome portion when the actuator means is manipulated to maintain a substantially equal distribution of pressure upon the bridging contact member when it is moved to its different positions.

3,679,848

COMBINED POTENTIOMETER AND SWITCHING STRUCTURE WITH IMPROVED RADIAL CONTACT PRESSURE CONTACT MEANS

Paul F. Gerwitz, West Covina, Calif., assignor to Spectrol Electronics Corporation, City of Industry, Calif.

Division of Ser. No. 828,618, May 28, 1969, Pat. No. 3,587,027. This application June 1, 1970, Ser. No. 54,042
Int. Cl. H01h 19/56, 21/56
U.S. Cl. 200—8 A 2 Claims



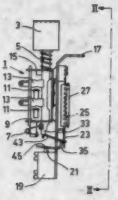
A combined potentiometer and switching structure including wiper contacts fixed to a shaft and having contacting engagement with an annular resistor and a pair of switching rings. The wiper contacts are located coincident, or in phase relation. The switching rings are each provided with an interrupted area, such areas are located in an arc complemental to the arc of the resistor and are circumferentially spaced apart a distance not greater than the length of the resistor contacting surface whereby, during rotation of the shafts, circuits connected to the switch rings are opened at different positions with respect to the resistor wiping contact. An annular supporting ring formed of electrical insulation material and provided with a central rib projecting from the inner surface thereof serves as a convenient mounting for the switch rings.

3,679,849

SWITCH WITH A DELAY MECHANISM

Cornelis Willem Zwiep, and Bernardus Ignatius Maria van Steen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 11, 1971, Ser. No. 114,459
Claims priority, application Netherlands, March 31, 1970, 7004569
Int. Cl. H01h 43/00
U.S. Cl. 200—33 R 4 Claims



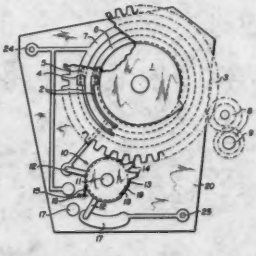
A switch assembly having a primary switch which actuates a secondary switch through an intermediate member. After the switches have been switched to the ON position, the intermediate member is set, by a delay mechanism, to a position in which it is no longer operative to maintain the secondary switch in the ON condition.

3,679,850

SWITCH CLOCK

Friedrich Arzt, and Paul Hofert, both of Frankfurt/Main, Germany, assignors to VDO Tachometer Werke Adolf Schindling Gmbh, Frankfurt/Main, Germany

Filed Nov. 16, 1970, Ser. No. 89,801
Int. Cl. H01h 43/10
U.S. Cl. 200—37 R 6 Claims



A switch clock, comprising a dial train indicating the time, and at least two switching contacts. A cam means actuates the switching contacts. A switch device contains the cam means. A clockwork and a motor, respectively, drive the cam disk of the dial train. An adjusting means is provided for adjusting the switching times. An adjusting disc carries the switching contacts and engages the adjusting means by means of a drive. A rotary switch means comprises a switch shaft provided for ad-

justing the various operative states of the switch device, and a gear is mounted on the shaft of the rotary switch means and at least directly engages the adjusting disc, wherein the gear is capable of being actuated by means of teeth disposed on a smaller portion of its periphery by turning the adjusting disc.

3,679,851

AUTOEXTINGUISHING INTERRUPTERS

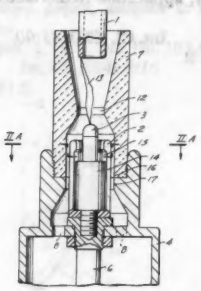
Andre Latour, Grenoble, France, and Giacomo Fumagalli, Bergamo, Italy, assignors to Magrini-Fabbriche Riunite Magrini Scarpa e Magrano M.S.M.-S.p.A., Milan, Italy

Filed June 22, 1970, Ser. No. 48,118

Claims priority, application France, June 23, 1969, 6920971

Int. Cl. H01h *33/70*

U.S. Cl. 200—148 A **6 Claims**



The invention relates to a self-extinguishing interruptor in which one of the contacts is mounted in the upstream portion of an insulating tube. It is characterized in that the total section of the passage of the conduit or conduits which feed the compressed gas to the tube is limited to a value equal to or less than the section of the passage of the neck of the tube.

3,679,852

SPRING OPERATED MAKING DRIVING MECHANISM FOR CIRCUIT BREAKING AND SWITCHING DEVICE

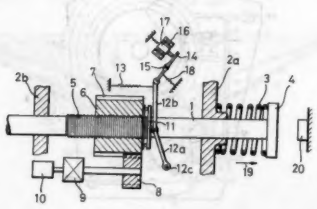
Hitoshi Himi; Yasuhiro Shinmon, and Tokuro Teshima, all of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed March 22, 1971, Ser. No. 126,515

Claims priority, application Japan, March 27, 1970, 45/29294

Int. Cl. H01h *3/30*

U.S. Cl. 200—153 SC **2 Claims**



The actuating mechanism for a circuit breaker or switch has a bar moved longitudinally by a spring. The spring is charged by a reversible electric motor which first turns an internally threaded gear on the bar to shift the gear along the bar and thereby to engage a latch on the gear with a remotely controlled mechanism, and thereafter turns the axially secured gear to shift the bar and thereby to tension the spring. The bar is moved by the spring when the mechanism releases the latch.

3,679,853

MULTIPLE CONTACT SYSTEM FOR CAM OPERATED SWITCHES

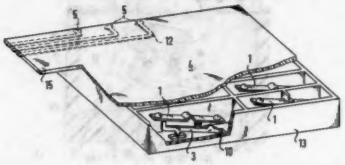
Walter Holzer, Droste-Hulshoff-Weg, Germany, assignor to Holzer Patent AG

Filed Jan. 25, 1971, Ser. No. 109,444

Claims priority, application Switzerland, Jan. 26, 1970, 1016/70; Jan. 26, 1970, 1017/70; Jan. 26, 1970, 1018/70; Jan. 26, 1970, 1019/70

Int. Cl. H01h *1/20*

U.S. Cl. 200—166 J **10 Claims**



A multiple contact switching apparatus having a plurality of individual switching compartments independent of one another and a printed wiring board which is an integrated component of the apparatus and common to all switching compartments.

3,679,854

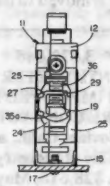
ROTATABLY REVERSIBLE CONNECTOR FOR ELECTRIC CIRCUIT BREAKER

Thomas A. Burd, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.

Filed June 18, 1971, Ser. No. 154,388

Int. Cl. H01h *9/00, 9/54*

U.S. Cl. 200—166 BH **4 Claims**



A connector means is provided for electrical connection of a conductor to a circuit breaker which may be selectively mounted at its top or bottom to a panel. A generally cylindrical connector body has an opening in a planar portion to accommodate a clamping screw. Upon removal of the clamping screw, slots in the connector body accommodate insertion of the end of a screwdriver to facilitate rotation of the connector body.

3,679,855

PROTECTIVE BARRIERS FOR WINDOW OF MICROWAVE OVEN DOOR

Thomas J. Binzer, Louisville, Ky., assignor to General Electric Company

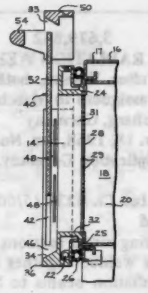
Filed June 11, 1971, Ser. No. 152,336

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **8 Claims**

A door construction for a microwave cooking oven where the door has a narrow frame with a large window opening. The inner surface of the window opening is covered with a perforated microwave radiation barrier, while the outer surface of the opening is fitted with a transparent interference barrier.

Air passages are formed in the door to permit a current of ambient air to sweep the inner surface of the transparent barrier as well as to serve as an oven venting means. This transparent



barrier may be quickly removed from the door for ease of cleaning. A portion of the door frame is integral with the transparent barrier for ease of handling this barrier.

3,679,856

DEVICE FOR THE MANUFACTURE OF WELDED STEEL PIPE FROM STEEL OF ANY GRADE

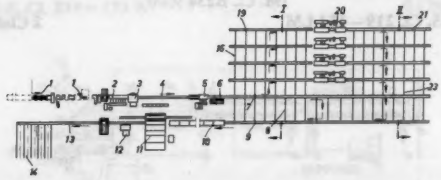
Kurt Gruber, Monchengladbach, Germany, assignor to Mannesmann-Meer Aktiengesellschaft, Monchengladbach, Germany

Continuation of Ser. No. 700,350, Jan. 24, 1968. This application May 21, 1970, Ser. No. 41,664

Claims priority, application Germany, Jan. 25, 1967, M 72538

Int. Cl. B23k *31/06*

U.S. Cl. 219—59 **4 Claims**



A device for welding of soft steel pipe by resistance welding and of high-alloyed steel pipe by arc welding. It consists of two ways, one for each type of welding, which are synchronized to the machines for the preparation of the steel band and its shaping into a split tube. Because arc welding proceeds at considerably lower speed than resistance welding, a plurality of welders are provided together with means for assigning each split pipe length to one such arc welder. The combination of two different welding ways enables manufacture of seamed pipe from any grade of steel, a reduction of bulged-out end waste, perfect deburring of the seam and savings in time when changing dimensions, using high-alloyed steel.

3,679,857

STABLE DIELECTRIC FLUID FOR ELECTRICAL DISCHARGE MACHINING COMPRISING A MINERAL OIL, A METAL SULFONATE AND A PHENOLIC ANTIOXIDANT

Robert A. Stayner, Palos Verdes Estates, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 735,578, June 10, 1968. This application March 22, 1971, Ser. No. 126,981

Int. Cl. B23p *1/08*

U.S. Cl. 219—69 D **1 Claim**

A method for shaping an electrically conductive material by means of electrical discharge machining employing as a dielectric fluid a primarily aliphatic light oil of low viscosity having in minor amounts an oil-soluble metal sulfonate detergent and a phenolic antioxidant.

3,679,858

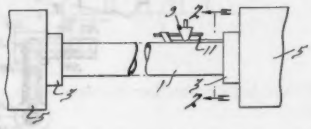
METHOD FORMING CLAD PLATES FROM CURVED SURFACES

William C. Bollinger, Troy, Mich., assignor to Detroit Flame Hardening Co., Detroit, Mich.

Filed March 17, 1971, Ser. No. 125,202

Int. Cl. B23k *9/04*

U.S. Cl. 219—76 **9 Claims**



A plate having a special surface layer is made by shaping to a desired configuration a longitudinal section cut from a tube that has been surfaced by a suitable continuous welding deposition process, preferably a bulk welding process.

3,679,859

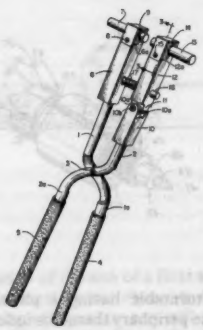
SPOT WELDING TOOL

Raymond J. Comeau, 41 High Rock St., Lynn, Mass.

Filed July 20, 1971, Ser. No. 164,358

Int. Cl. B23k *11/28*

U.S. Cl. 219—90 **7 Claims**

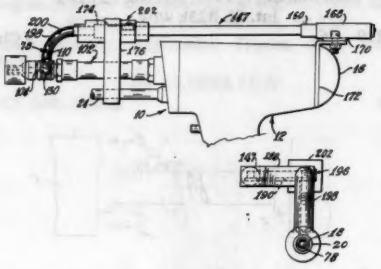


The spot welding tool is of pliers type and has a pair of crossed drill rod handles pivotally connected together. A solid jaw is carried by one drill rod and a movable jaw pivotally connected to the other drill rod. A pair of opposed copper electrodes are carried by the jaws respectively with means for adjusting the gap between the ends of the electrodes. A pin of substantial diameter is mounted on the solid jaw snugly engaging a corresponding bore in the movable jaw. A spring is disposed around the pin between said jaws yieldably tending to separate the jaws, whereby when the handles are squeezed together the movable jaw will move in parallel relation to the solid jaw allowing the electrodes to close over the work evenly.

3,679,860
STUD WELDING TOOL AND STUD LOADING DEVICE THEREFOR

Steve Spisak, Elyria, Ohio, assignor to TRW Inc., Cleveland, Ohio

Division of Ser. No. 358,736, April 10, 1964, Pat. No. 3,525,846. This application June 1, 1970, Ser. No. 54,071
Int. Cl. B23k 9/20
U.S. Cl. 219—98 2 Claims

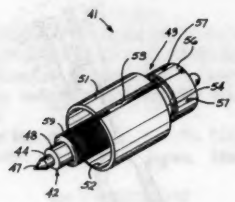


This is a welding tool having a chuck means, a feed passage means, a pair of spaced socket means, and a removable stud magazine held by the socket means. The magazine has resilient stop means used as a safety mechanism.

3,679,861
METHODS OF ASSEMBLING AND TESTING ELECTRICAL COMPONENTS

Thomas Alvin La Valle, Annapolis, Md., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 878,017, Nov. 19, 1969, Pat. No. 3,618,204. This application Aug. 13, 1971, Ser. No. 171,463
Int. Cl. B23k 11/10
U.S. Cl. 219—117 1 Claim



A rotatable turntable having a plurality of workholders spaced about the periphery thereof is indexed to advance each of the workholders successively through each of a plurality of work stations positioned adjacent the periphery of the turntable to assemble electrical components. A first part positioned in one of the workholders at a first work station has the leading end of an insulated wire extending from a supply of wire welded thereto at a second work station, after which the first part is indexed to a third work station without severing the wire extending from the first part to the supply. At the third work station a portion of the wire extending to the first part in the workholder is severed from the supply and the new leading end of the wire is attached to the first part in the next succeeding workholder. The first part is rotated in the first workholder while tensioning the wire extending from and secured to the first part to wind the wire thereon as the workholder is advanced with the turntable through a fourth and a fifth work station to a sixth work station. At the sixth work station a second part is assembled to the first part and, simultaneously, the insulation on a portion of the wire extending from the first part is stripped. At a seventh work station the trailing portion of the wire is welded to a metal cap which is secured to the second part and the strength of the weld is tested.

3,679,862
CORPUSCULAR RADIATION WELDING PROCESS

Albert Stoll, and Walter Wanka, both of Augsburg-Stadtbergen, Germany, assignors to Maschinenfabrik Augsberg-Nurnberg AG, Augsberg, Germany

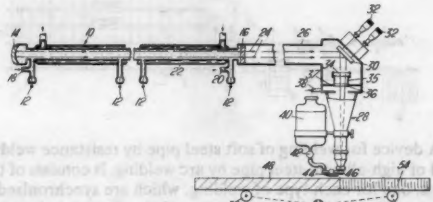
Filed Nov. 18, 1968, Ser. No. 845,922
Claims priority, application Germany, Nov. 17, 1967, P 16 65 458.3
Int. Cl. B23k 15/00
U.S. Cl. 219—121 EM 4 Claims

A process for welding metal sections in which at least two metal workpieces are welded together across a contact area using corpuscular radiation beams to heat the metal in the respective workpieces adjacent said contact area and form a welded joint. A space is formed in the workpiece in the region of the contact area, the space being positioned within said area in a location in which the corpuscular radiation beams utilized for welding dissipate. A metal tube filled with a corpuscular radiation sink material is placed in said space. Said tube completely fills said space. Corpuscular radiation beams are directed from opposed sides of said joint to weld said workpieces together.

3,679,863
THERMAL CUTTING APPARATUS

Peter Thomas Houldcroft, Royston, and Arthur Basil Joseph Sullivan, Letchworth, both of England, assignors to National Research Development Corporation, London, England

Filed Nov. 10, 1969, Ser. No. 875,365
Claims priority, application Great Britain, Nov. 12, 1968, 53,647/68
Int. Cl. B23k 9/00
U.S. Cl. 219—121 LM 2 Claims



To cut paper, timber, fabric etc., with a laser beam, a jet of air (or other gas which is inert in the process) carrying an atomized stream of a liquid coolant is directed on to the moving region of the workpiece at which the laser beam is concentrated. This reduces the spread of charring or tar deposit from the cut along the surfaces of the workpiece.

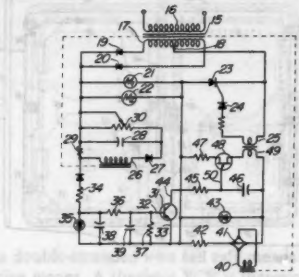
3,679,864
ELECTRODE FEED USING PLURAL MOTORS HAVING CONSTANT SPEED DROOPING CHARACTERISTICS

Kenichiro Tanegashima, Ikeda-shi; Makoto Kobayashi, Nishinomiya-shi, and Shinichiro Kudo, Kawanishi-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 22, 1969, Ser. No. 887,044
Claims priority, application Japan, Dec. 26, 1968, 44/689
Int. Cl. B23k 9/00
U.S. Cl. 219—130 2 Claims

A semi-automatic or automatic welding apparatus using two or more motors having drooping characteristics approximat-

ing constant speed for feeding a consumable welding electrode wire, wherein the distance from a wire reel to a welding torch is increased, and the portable portion reduced in size



and weight, whereby the maneuverability and portability of the semi-automatic or automatic welding apparatus are improved and the stability of the wire feed is enhanced.

3,679,865

APPARATUS FOR CONTROLLING ELECTRIC WELDING PROCESSES

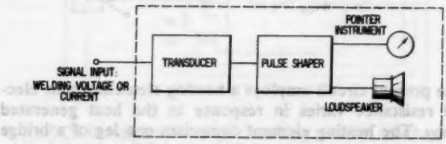
Friedrich Erdmann Jesnitzer, Linden, and Dietrich Rehfeldt, Vinnhorst, both of Germany, assignors to Redemat S.A., Luxembourg-Ville, Luxembourg

Continuation of Ser. No. 859,161, Sept. 18, 1969, abandoned. This application June 18, 1971, Ser. No. 154,633

Claims priority, application Germany, April 15, 1969, P 19 19 034.2

Int. Cl. B23k 9/10

U.S. Cl. 219—131 R **9 Claims**



An apparatus for controlling electric welding processes with consumable electrodes by generating electric pulses of the variation in the welding parameters, the voltage, current or mechanical vibration, in the workpiece. These variations which are characteristic for the melting during welding are picked up, transformed and supplied to a signaling device to furnish a statement on the transfer of the material which the welder uses to correctly guide the electrode.

3,679,866

PULSED ARC SPRAY WELDING IN A NARROW GROOVE

Masayasu Arikawa, Fujisawa; Tomokazu Godai; Toshio Arai, Kamakura; Hironosuke Kada, Kamakura, and Akihiko Iochi, Kamakura, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed June 9, 1970, Ser. No. 44,808

Claims priority, application Japan, June 10, 1969, 44/45683

Int. Cl. B23k 9/00

U.S. Cl. 219—137 **11 Claims**

A process for multi-layered spray arc welding using a gas shielded consumable electrode which comprises: preparing the welding edge of each of a pair of plate members such that when said members are placed into welding alignment, the combination of their prepared edges will together form an I-shaped or V-shaped welding line groove between said members, placing said plate members into welding alignment so as to form said welding line groove, and spray arc welding said plate members along said welding line groove with consumable electrode in the presence of a shielding gas by passing a welding current having a rectangular waveform through said electrode to said welding line, such that at recurring intervals, a welding arc having a current density of from 100 to 300

amp/mm² is established between the tip of said consumable electrode and said welding line groove for a period of time of from 0.3 to 5 seconds, and extinguished for a period of time of from 0.2 to 3 seconds, such that when said arc is established, molten metal droplets are transferred to said groove, and when said arc is extinguished, the transfer of molten metal droplets is interrupted.

3,679,867

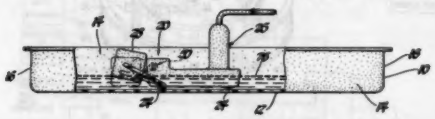
FLOAT ACTUATED EVAPORATOR HEATER

James A. Canter, Englewood, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 1, 1971, Ser. No. 148,420

Int. Cl. F22b 1/28

U.S. Cl. 219—272 **3 Claims**



The range of motion of the arm of a float which controls the energization of electrical heater elements disposed within a condensate receiving refrigerator pan will vaporize condensate therein from refrigerator cooling coils automatically to insure sufficient immersion of the heater elements to prevent overheating of the pan. The float actuates a magnetic reed switch which deenergizes the heater elements when the condensate surface level is reduced a small amount to open the contacts of the switch and thereby deenergize the heater.

3,679,868

BAFFLE FOR ELECTRIC BASEBOARD HEATER UNITS

George G. England, Skaneateles, N.Y., assignor to The Singer Company, New York, N.Y.

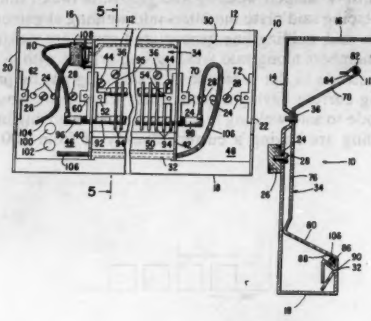
Filed Aug. 30, 1971, Ser. No. 175,906

Int. Cl. F24h 3/04, 9/10; H05b 1/02

U.S. Cl. 219—368 **2 Claims**

The baffle of an electric baseboard heater is formed with necked elongated passages, one to house and maintain in

place the capillary tube of a thermal-switch and another to house and maintain in place a wire lead connected to one terminal of a heating element for which the baffle serves as a heat reflector.



3,679,869

WARMER STAND FOR A SELECT NUMBER OF FLUID CONTAINERS

Richard A. Keeler, Tenafly, N.J., and Arthur Eckstein, Roslyn Heights, N.Y., assignors to Chemex Corporation, New York, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,382
Int. Cl. F27d *11/02*
U.S. Cl. 219—432 **4 Claims**

A beverage warmer is provided which has a surface element for supporting a fluid container or vessel thereon and for transferring heat directed thereto by a heating element to the fluid container. The beverage warmer also has an annular upwardly projecting member contiguous with the surface element for reducing the amount of heat loss to the surrounding atmosphere.

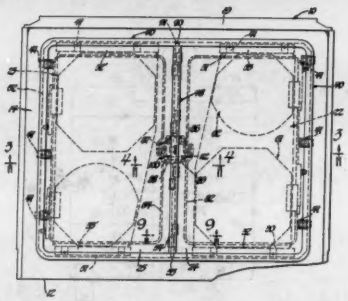
3,679,870

TERMINAL BOARD ASSEMBLY FOR OUT-OF-PLANE CONTACTS

Donald L. Opp, Trotwood, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 30, 1971, Ser. No. 176,201
Int. Cl. H05b *3/68*
U.S. Cl. 219—445 **3 Claims**

A terminal board arrangement for a cooking assembly including a pair of frangible utensil supporting cover plates supported by clamping means in the assembly wherein the board contacts provide continuity between electrically conductive fracture detector stripes on the underside of each plate. Spring means biases the terminal board upwardly against the underside of the cover plates in bridging fashion such that three of the fixed terminal board contacts are in a coplanar triangular formation for positive contact with their mating cover plate contacts while a fourth floating contact is positioned on a spring arm operative for seeking its mating cover plate contact thereby compensating for any out-of-plane condition which may exist between the cover plates.

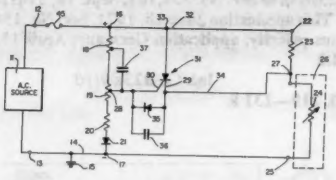


3,679,871

TEMPERATURE CONTROL CIRCUIT EMPLOYING A VARIABLE RESISTANCE HEATING ELEMENT

Egils Evalds, 124 Linwood Ave., Ardmore, Pa.

Filed Jan. 5, 1971, Ser. No. 104,075
Int. Cl. H05b *1/02*
U.S. Cl. 219—499 **3 Claims**



The present circuit employs a heating element whose electrical resistance varies in response to the heat generated thereby. The heating element comprises one leg of a bridge circuit and the output signal from the bridge circuit is connected to fire a silicon-controlled rectifier. The silicon-controlled rectifier is connected to short out a leg of the bridge circuit which is serially connected to the heating element thereby providing full power for energizing the heating element when the silicon-controlled rectifier is turned on and simply providing control current to the heating element when the silicon-controlled rectifier is turned off.

3,679,872

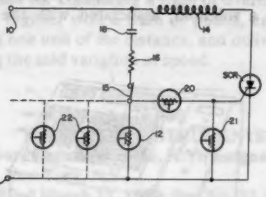
SELF COMPENSATING CONTROL CIRCUIT

Peter Lauck, III, Princeton, N.J., assignor to Robert H. Myers, Washington, D.C., a part interest

Filed Aug. 3, 1971, Ser. No. 168,614
Int. Cl. H05b *1/02*
U.S. Cl. 219—501 **12 Claims**

A temperature compensating control device for blankets, wall wire or outlet or fuse breaking devices, which incorporates solid on/off control. The use of solid on/off control with resistance temperature compensation sensors rather than a phase control renders the circuit free of "gate trigger" means normally associated with simplified thyristor circuits. This simplifies greatly the transistor stage gain or transistor shunt controls previously demonstrated in the art. Intrinsic simplification with fewer parts and solid state temperature re-

sistance compensating means of the thyristor itself are innovative, besides requiring fewer parts. The circuits incorporates, preferably a temperature override electromechanical heat sensitive, fail safe control regulator and additionally in one



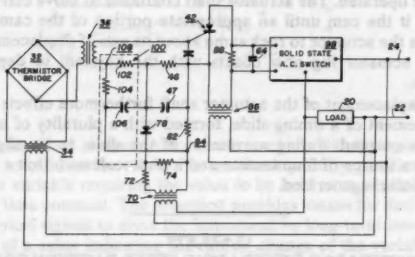
aspect a double-stranded wire fail safe means for temperature responsive means. A thyristor SCR is incorporated in the circuit and functions in such a manner as to give snap on or off control.

3,679,873

STABILIZING CIRCUIT FOR ANTICIPATING CONTROLLER

John R. Bray, Pensacola, and Perry F. McKinney, Santa Rosa, both of Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 11, 1971, Ser. No. 105,176
Int. Cl. H05b *1/02*
U.S. Cl. 219—501 **2 Claims**



An SCR is supplied with quick-acting positive feedback bias to insure reliable turn-on. A slower acting negative feedback bias then turns the SCR off. The positive feedback bias makes the circuit less sensitive to variations among SCR's and other circuit components.

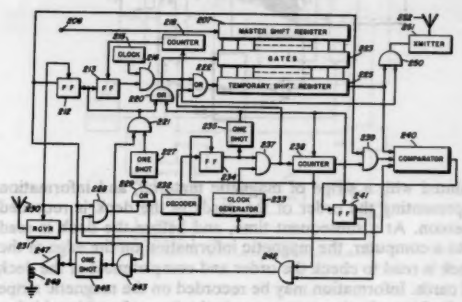
3,679,874

AUTOMATIC BAGGAGE HANDLING SYSTEM

William E. Fickenscher, Baltimore, Md., assignor to The Bendix Corporation

Division of Ser. No. 735,132, June 6, 1968. This application July 6, 1970, Ser. No. 60,992
Int. Cl. G06k *7/00*
U.S. Cl. 235—61.7 R **3 Claims**

An automatic baggage handling system utilizing individually powered baggage carts designed to carry luggage or other material at airports, railroad stations, and the like. Baggage handling information is converted into an electrical binary train of bits prepared by an optical ticket reader which scans a precoded, specially prepared baggage ticket and converts the data thereon into binary form. Baggage associated with the particular baggage ticket is loaded on to the baggage cart and a low power transmitter transfers the digital data to an escort memory in the form of a transceiver on the baggage cart. The loaded self-propelled baggage cart then moves along a track, with its escort memory being read by track readers located at critical, switching portions of the track, the track being switched in response to information contained in the baggage cart escort memory so that the baggage cart is transported expeditiously to a predetermined point on the track which may be a final destination or an intermediate holding area. Means are also provided for changing the information contained in



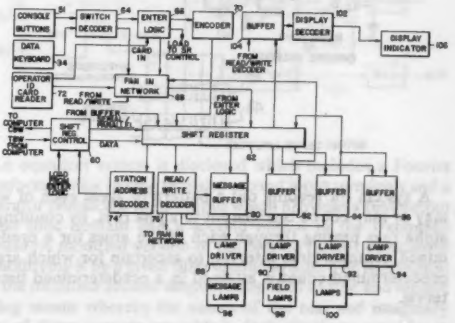
the escort memory of identified carts in the holding area so as to encode a message therein identifying the desired final destination of the cart. The cart is then released from the holding area and delivered to the desired final destination, the aforementioned track readers reading the escort memory and switching the track in accordance with the information read.

3,679,875

MEDICAL TEST DATA ENTRY TERMINAL

Edward B. Rawson, Lincoln, and John B. Dowling, Stow, both of Mass., assignors to Searle Medidata Inc., Waltham, Mass.

Filed Sept. 21, 1970, Ser. No. 73,973
Int. Cl. G06f *3/02*; G06r *5/00*
U.S. Cl. 235—61.7 R **9 Claims**



A terminal for the real time entry of medical test data into the computer based medical record of a patient. The terminal is operative only by an operator whose identification has been verified, and test data is visually verified before entry into the patient record.

3,679,876

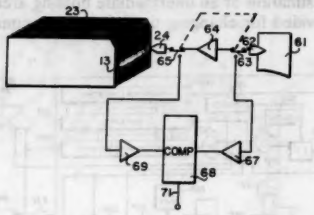
CARD DECK CHECKER

Ruth L. Faith, Alexandria, Va., and William Grobman, Bowie, Md., assignors to The Singer Company, New York, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,262
Int. Cl. G06k *1/12, 5/00*
U.S. Cl. 235—61.7 R **8 Claims**

This invention provides a means for determining if the individual punched cards in a deck of punched cards are in

proper sequence, if the deck is complete, and if the deck contains strange and unrelated cards. Once a deck of cards has been arranged in its proper sequence, the edge of the deck is



painted with a stripe of magnetic material, and information representing the order of the cards in the deck is recorded thereon. At a subsequent time, and before the deck is read into a computer, the magnetic information on the edge of the deck is read to check the order and completeness of the deck of cards. Information may be recorded on the magnetic stripe in the form of pulse patterns, or in the form of positional information. The recorder is a simple device using a standard multichannel magnetic pulse recording head and provides the means for moving the deck of cards past the head. The reading device is similar to the recording device.

3,679,877

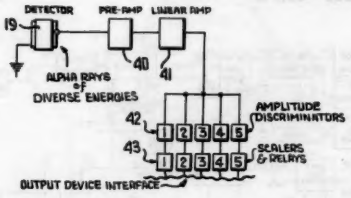
ALPHA RAY PATTERN RECOGNITION SYSTEM

Leon Weiner, 5134 Braesheather St., Houston, Tex.; John E. Kilpatrick, Houston, Tex., and Robert J. Spiger, Bellaire, Tex., assignors to Weiner, by said Kilpatrick and Spiger

Filed June 18, 1969, Ser. No. 834,306

Int. Cl. G06m *11/04*

U.S. Cl. 235—92 PC **13 Claims**



A system for reading out a pattern of areas each of which may or may not be transparent to alpha rays, by counting the alpha rays passing through each of the areas for a predetermined common time interval, to ascertain for which areas a predetermined count is attained in a predetermined time interval.

3,679,878

REMOTELY CONTROLLED ACTUATOR

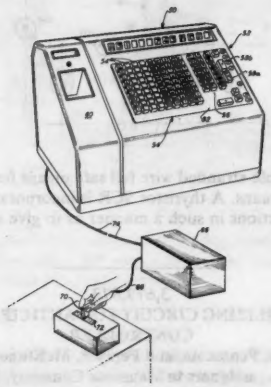
David L. Greenwood, New York, N.Y., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed Oct. 26, 1970, Ser. No. 83,968

Int. Cl. G06c *7/02, 25/00*

U.S. Cl. 235—146 **7 Claims**

A plurality of actuators are disposed so that there is an actuator between each keyrow column of a cash register keyboard. Each actuator is journaled for longitudinal movement from a home position to a plurality of positions whereat successive lugs, carried by the actuator, are aligned with successive key, stems of the cash register; and for rotational movement following alignment of a lug with a keystem of the cash register, to coact with and move the keystem and the key associated therewith into an actuated condition. Each of the actuators is urged from its home position by a spring, but restrained against such movement due to the interaction between rack teeth carried by the actuator and a gear and cam assembly carried by an actuator shaft. As the actuator shaft is operated the cam rotates permitting rotation of its associated gear and longitudinal displacement of the rack due to the spring action. In response to an appropriate signal from a remote source a solenoid, associated with the actuator, is



deenergized and teeth carried by a spring biased pawl engage teeth carried by the actuator to arrest movement of the actuator with the lug thereon aligned with the cash register keystem to be operated. The actuator shaft continues to move carrying with it the cam until an appropriate portion of the cam engages the actuator to rock same about its axis of displacement. The actuator lug now coacts with the keystem to depress same.

Displacement of the actuator shaft furthermore effects displacement of a timing slide, formed with a plurality of apertures adapted, during movement of the slide, to be aligned with a source of illumination and a photocell such that a timing pulse is generated.

3,679,879

SYSTEM FOR GENERATING SPEED PATTERN FOR SPEED CONTROL OF MOVING BODY

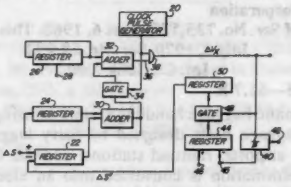
Susumu Seki, Kokubunji-shi; Makoto Noumi, Hachioji-shi, and Tadashi Takaoka, Katsuta-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 18, 1969, Ser. No. 886,123

Claims priority, application Japan, Dec. 20, 1968, 44/94044

Int. Cl. G06f *15/50, 15/32, 15/34*

U.S. Cl. 235—150.31 **9 Claims**



A system for generating a speed pattern for the speed control of a moving body comprising a first register which is preset with the total variation of time including the time required when the speed of the moving body ranging from the initial speed to the final speed is controlled by a predetermined rate of speed change, a coefficient multiplier for com-

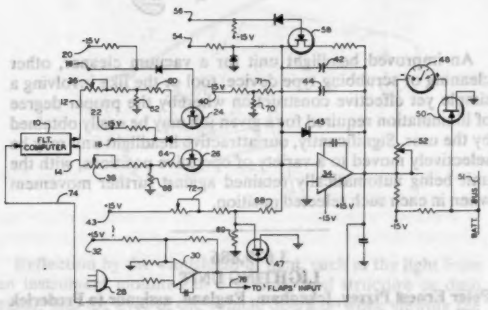
puting a very small variation of time during the control of the speed of the moving body by said rate of speed change, a second register to which the result of addition of the output from said coefficient multiplier and the content of said first register is supplied each time a variation of speed occurs during said very small variation of time, and an amplifier having a very great gain for comparing a train of overflow pulses from said second register with a train of pulses, each one thereof representing one unit of the distance, and delivering an output representing the said variation of speed.

3,679,880

SIMULATED INSTRUMENTS

Fred F. Carver, Chenango Forks, N.Y., assignor to The Singer Company, New York, N.Y.

Filed March 27, 1970, Ser. No. 23,152
Int. Cl. G06g 7/56, 7/72
U.S. Cl. 235—151.34 **10 Claims**



A simulated instrument for use in a vehicle simulator, or the like, to indicate the value of an assumed quantity, position, or other variable requiring the value to be held over a relatively long time constant. The invention provides means for deriving electrical signals to drive the instrument by long-term integration of a value indicating the rate of change of the variables. Means are provided for recycling the integrator at frequency, short intervals to maintain a high degree of accuracy.

3,679,881

DIGITAL SINE WAVE GENERATOR AND METHOD

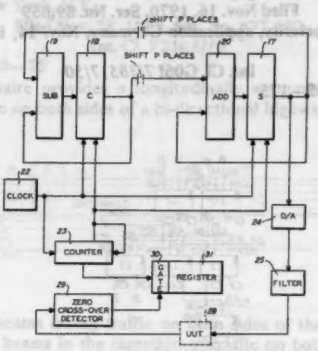
Allan R. Gondeck, Gainsville, Fla., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 19, 1970, Ser. No. 47,726
Int. Cl. G06f 7/38
U.S. Cl. 235—152 **5 Claims**

A digital sine wave generator utilizes a closed loop according to the formula:

$$\sin\theta = -\int\int \sin\theta d\theta d\theta$$

Initially, a first register is set with O and a second register is set with 1 therein. Incrementally, the sum in the second register is multiplied by a number between zero and one and added to the sum in the first register and the sum in the first register is multiplied by a number between zero and one and subtracted from the sum in the second register. A counter may be provided to count the increments and reset the first and second registers when the count indicates a full cycle. Subtraction is made by adding to the inverse of the second register. The



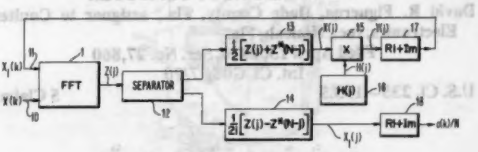
generator may be employed to test the phase shift of a unit under test by reading the counter when the output of the unit under test crosses zero.

3,679,882

FOURIER DIGITAL FILTER OR EQUALIZER AND METHOD OF OPERATION THEREFOR

Gerald K. McAuliffe, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 11, 1970, Ser. No. 45,520
Int. Cl. G06f 7/38
U.S. Cl. 235—156 **22 Claims**

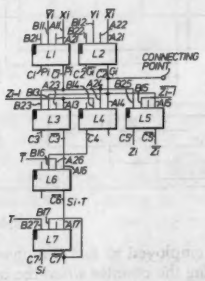


An equalizer system is disclosed which includes a Fourier transform device having first and second input terminals and a separator connected to its output which provides a first output in the time domain and a second output in the frequency domain. A modified version of the second output is obtained by modifying it by a given filter characteristic. The first output and the modified second output are applied to first and second adding means wherein the values of the real and imaginary parts of these outputs are added algebraically to provide an equalized output in the time domain at the output of the first adding means while the output of the second adding means is applied via a feedback path to the second input terminal of the Fourier transform device along with an input on the first terminal thereof which occurs subsequent to the initial input applied to the first terminal. The method of operation consists in adding algebraically the values of the real and imaginary parts of a block of data which has been previously modified by a filter characteristic and transformed to the frequency domain to provide an output consisting of N parts; applying this output to a Fourier transform device to convert it to an apparent frequency domain of N complex parts; separating the output in the apparent frequency domain into frequency and time domain components each of N complex parts and, adding algebraically the values of the real and imaginary parts of the time domain component to provide an equalized or filtered block of data consisting of N real parts in the time domain.

3,679,883
FULL ADDER

Dieter Straub, Constance, Germany, assignor to Telefunken Patentverwertungsgesellschaft, Ulm/Danube, Germany

Filed Nov. 16, 1970, Ser. No. 89,859
Claims priority, application Germany, Nov. 14, 1969, P 19 57 302.5
Int. Cl. G06f 7/385, 7/50
U.S. Cl. 235—175 8 Claims

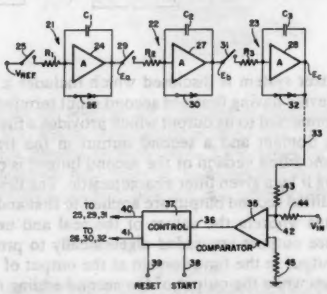


A full adder composed essentially of six identical logic circuits each arranged to receive inputs A1, A2 . . . B1, B2... and to produce outputs C = A1 + A2... + B1 + B2... and $\overline{C}$ = A1 + A2... (B1 + B2...), the logic circuits being arranged to receive addend input values X_i and Y_i and carry inputs Z_{i-1}, and their complements, and being arranged in at least two groups of circuits, the first group producing an output carry signal and the second group receiving inputs from the first group and producing an output sum signal.

3,679,884
MATHEMATIC ROOT COMPUTER

David R. Figueroa, Dade County, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed April 13, 1970, Ser. No. 27,860
Int. Cl. G06g 7/20
U.S. Cl. 235—193.5 5 Claims

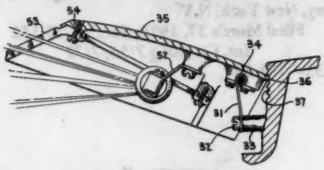


Apparatus for electronically determining the mathematic root of a given value, comprising in series a plurality of integrators, a comparator, and a control circuit. A reference voltage is applied to the input of the first integrator and elicits an output from the last integrator, which output is compared by the comparator with an input voltage that reflects the value to be rooted. When the two compared voltages are equal, the control circuits undergoes a change of state, at which time the output voltage of the first integrator is a mathematic root of the given input value. The order of the root attained at the first integrator depends upon the number of integrators in the series; i.e., a series of three integrators will cause the output from the first integrator to be the cube root value of the input voltage. Moreover, other roots can be obtained from the output of the intermediate integrators.

3,679,885
MOVABLE LIGHT ARRANGEMENT

Wilbur-Webb Selley, Maitland, and Richard H. Schaffer, Orlando, both of Fla., assignors to Vactronics, Inc., Orlando, Fla.

Filed Feb. 24, 1969, Ser. No. 801,608
Int. Cl. F21v 33/00
U.S. Cl. 240—2 VC 5 Claims



An improved headlight unit for a vacuum cleaner, other cleaning or scrubbing type device, tool or the like involving a simple yet effective construction whereby the proper degree of illumination required for a given job may be easily obtained by the user. Significantly, our attractive headlight unit may be selectively moved to a variety of operative positions, with the unit being automatically retained against further movement when in each such selected position.

3,679,886
LIGHTING UNIT

Peter Ernest Pizzey, Ickenham, England, assignor to Frederick Thomas & Company Limited, London, England

Filed Oct. 20, 1969, Ser. No. 867,719
Int. Cl. F21p 1/00
U.S. Cl. 240—3 6 Claims

A bollard lighting device having a lighting unit mounted upon a tubular post to provide lighting through a 360° angle in a horizontal median plane. A cylindrical lens member is captively held between a closed end cylindrically shaped upper body member and a cylindrically shaped lower body member. A cylindrically shaped inner base member fits inside the lower body member, and supports the light source which extends into the cylindrical lens. The lower body and inner base members are held together by a bayonet type lug fitting. An access door is provided in the tubular post to facilitate installation and maintenance of the wiring circuit from a power source to the light source. A lock, located in the lower body member,

utilizes a cam butting against a stop to prevent activation of the bayonet type lug fitting and therefore, disassembly of the lighting unit, and access through the door to the electric circuit in the tubular post by unauthorized persons.

3,679,887

LIGHT REFLECTION PREVENTIVE DEVICE

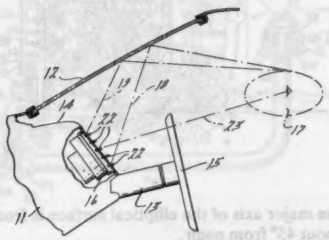
Peter J. Kennedy, Rochester, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed June 25, 1971, Ser. No. 156,781

Claims priority, application Great Britain, Oct. 14, 1970, 48,743/70

Int. Cl. B60q *3/04*

U.S. Cl. 240—8.16 **3 Claims**



Reflection by the windshield of light, such as the light from an instrument mounted in a vehicle cowl structure or dash panel, into the eyes of the vehicle operator when viewing the road ahead is prevented by slats arranged between the operator and the lighted instrument. The plane of the slats are approximately aligned with the operators line of sight.

3,679,888

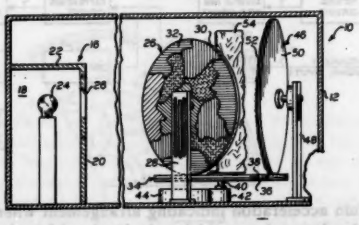
VARIABLE LIGHT PROJECTION APPARATUS

Earl M. Reiback, 20 E. 9th St., New York, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,309

Int. Cl. F21p *3/00*

U.S. Cl. 240—10.1 **8 Claims**



Apparatus for projecting continuously variable, multicolored, random patterns of light onto a translucent screen includes a lamp and a screen. It further includes a multicolored transparent wheel and a crinkle-surfaced reflecting disk, each in a frictional engagement with a motor-driven turntable. Optionally a reflecting strip extends from the turntable eccentrically of its axis of rotation. The screen is preferably transparent plastic containing a light absorbent dye and having a matte front and sandblasted rear surface.

3,679,889

BI-DIRECTIONAL HIGHWAY LUMINAIRE

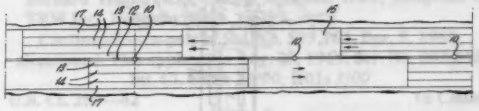
Kurt Franck, Newark, Ohio, assignor to Holophane Company, Inc., New York, N.Y.

Filed Nov. 18, 1969, Ser. No. 877,697

Int. Cl. F21s *1/10*

U.S. Cl. 240—25 **11 Claims**

A luminaire provides a longitudinally asymmetrical light distribution on both sides of a bi-directional highway with low



non-glare beams facing traffic on both sides of the highway and higher beams in the direction of traffic on both sides of the highway.

3,679,890

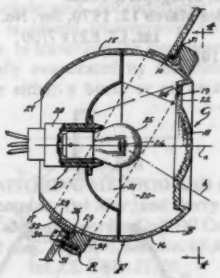
LIGHT WITH UNIVERSALLY MOUNTED AXIS FOR BODY PANELS AND THE LIKE

Clarence Pool, 8321 Passons Blvd., Pico Rivera, Calif.

Filed May 22, 1970, Ser. No. 39,644

Int. Cl. F21v *13/06*

U.S. Cl. 240—41.6 **6 Claims**



A light fixture having a beam directing axis adapted to be selectively positioned as required when mounted in a panel unpredictably disposed at varying angles, both simple and compound, and comprised of a universally revolvable sphere-shaped body held captive between clamp-rings secured to any panel thickness at an opening therein provided for the exposure therethrough of a beam directive means housed within said body.

3,679,891

LIGHTING FIXTURE ADAPTED TO BE MOUNTED ON A POLE

Wilbert Quack, Newark, Ohio, assignor to Holophane Company, Inc., New York, N.Y.

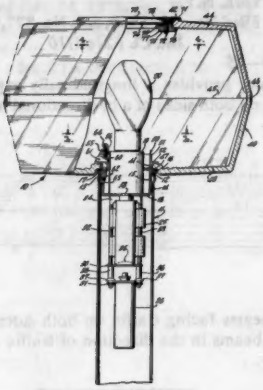
Filed Jan. 20, 1970, Ser. No. 4,212

Int. Cl. F21v *17/00*

U.S. Cl. 240—52 **18 Claims**

A pole mounted lighting fixture includes a lamp enclosure, i.e., a refractor, having opposed apertures. A lamp mounting adaptor for supporting the electrical components of the lamp, is inserted into the end of the pole and has a lip engaging the end of the pole. The refractor engages the other side of the lip

and is held in place by an internally mounted latching ring which cooperates with a tapered surface on the inside of the



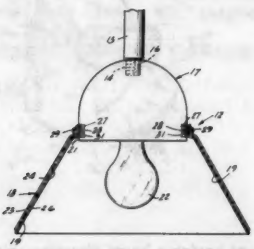
pole. A cover plate for the other aperture has externally operated screws with nuts extending through the aperture to engage the inner surface of the refractor.

3,679,892

DISPOSABLE REFLECTORS FOR LIGHTING FIXTURES

Jack F. Shearer, Lake Forest, Ill., assignor to Harvey Hubbell, Incorporated, Bridgeport, Conn.

Filed March 12, 1970, Ser. No. 18,838
Int. Cl. F21v 7/00
U.S. Cl. 240—103 4 Claims



A lighting fixture has a reflector including disposable or expendable means forming a light-reflective surface which is attached to the fixture in a manner to be easily and readily removed and replaced, thereby enabling rapid, convenient and economical restoration of a soiled reflective surface without requiring the trouble and expense of manual cleaning of the surface.

3,679,893

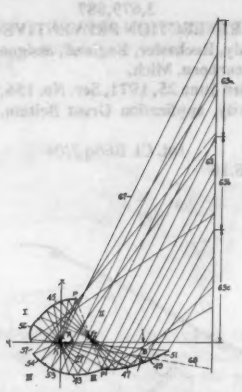
LUMINAIRE REFLECTOR COMPRISING ELLIPTICAL AND PARABOLIC SEGMENTS

Sylvan R. Shemitz, Woodbridge, and Benjamin L. Stahlheber, Clinton, both of Conn., assignors to Sylvan R. Schemitz and Associates, Inc., West Haven, Conn.

Filed Sept. 3, 1970, Ser. No. 69,344
Int. Cl. F21v 7/09
U.S. Cl. 240—103 R 19 Claims

Substantially uniform magnitude of illumination on a plane surface is provided by a concave reflector having a parabolic reflecting surface and an elliptical reflecting surface oriented relative to one another to satisfy the following criteria.

a. the first focal point of the elliptical surface is on the axis of the parabolic surface,
b. the second focal point of the elliptical surface is not within the closure formed by the inner surfaces of the reflecting surfaces and a plane across the outwardly extending edges of the surfaces,
c. the axis of the parabolic surface is from about 45° to about 90° from nadir, and



d. the major axis of the elliptical surface is from about 5° to about 45° from nadir.

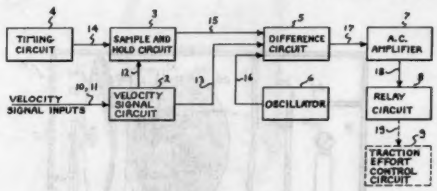
Preferred embodiments include the parabolic surface and elliptical surface separated by one or more general reflecting surfaces, and the same combinations of surfaces with a second parabolic reflecting surface or flat reflecting surface adjacent and below the first parabolic surface and a flat reflecting surface adjacent and outside of the elliptical surface. The additional surfaces provide further improvement in control of the reflections.

3,679,894

ACCELERATION CONTROL SYSTEM FOR VEHICLES

Douglas F. Smith, Erie, Pa., assignor to General Electric Company

Filed July 9, 1970, Ser. No. 53,582
Int. Cl. B60l 15/20
U.S. Cl. 246—182 C 11 Claims



Train acceleration indicating arrangement wherein a sample circuit samples a vehicle velocity signal for a brief interval during each sampling period and produces a sampling signal whose amplitude during each sample period is substantially constant and a function of the sampled velocity signal. Means are provided for algebraically adding an AC signal and the sampling and velocity signals to produce an AC output signal solely during sampling periods when the difference between the sampling and velocity signals exceeds a predetermined magnitude. A relay circuit actuated in response to the AC output signal provides an indication of satisfactory vehicle deceleration. The relay circuit is connected in an emergency

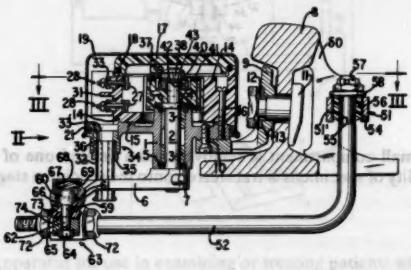
circuit of the type applying full service brakes upon detection of an abnormal indication. Actuation of the relay circuit holds off additional actuation of emergency brakes in the event the vehicle decelerates adequately subsequent to detection of an abnormal indication.

3,679,895

ELECTROMECHANICAL APPARATUS FOR CHECKING AND SIGNALLING THE POSITION OF A RAILWAY-TRACK SWITCH OR THE LIKE

Marcel Luc Amedee Paulve, 83 Le Muy, France

Filed Dec. 29, 1970, Ser. No. 102,338
Claims priority, application France, Dec. 31, 1969, 6945746
Int. Cl. B61l *5/00*
U.S. Cl. 246—253 10 Claims



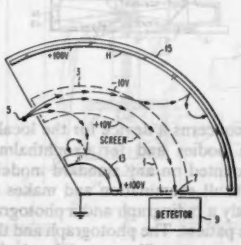
An electromechanical apparatus for checking and signalling the position of a railway-track switch comprising an electric switch actuated by a cam solid with a cam-carrying shaft forming the crank-pin of a crank whose arm is pivoted to one end of a transmission rod, the other end of which is pivoted to a switch blade, said crank and rod being connected by a ball joint comprising a connecting member mounted on and displaceable along said rod for being fixed in a selectively adjustable relative position.

3,679,896

ELECTROSTATIC PRISM

George A. Wardly, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,603
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 ME 16 Claims



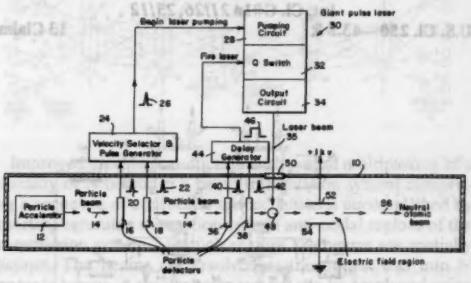
An electrostatic field to manipulate charged particles in a narrow band filter prism and energy discrimination prism arrangement is obtained by employing high transparency opposing screen electrodes. Adjacent each screen electrode particle attractor apparatus act to attract all particles outside the narrow band of particles. In the narrow band filter arrangement collector apparatus are provided to collect particles within the narrow band while in the discrimination arrangement collector apparatus are provided to collect both particles having energies above the narrow band and particles having energies below the narrow band.

3,679,897

LASER BOMBARDMENT OF MICROPARTICLE BEAM FOR PRODUCING ATOMIC PARTICLES IN THE FORM OF A BEAM OR AN EXPANDING CLOUD

David O. Hansen, Westminster; Saul Altshuler, Manhattan Beach; William Bernstein, Los Angeles, all of Calif., and Bernard Hamermesh, Shaker Heights, Ohio, assignors to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 599,163, Dec. 5, 1966, abandoned. This application Aug. 28, 1969, Ser. No. 853,818
Int. Cl. G01h *21/00*; H01s *3/00*
U.S. Cl. 250—42 16 Claims



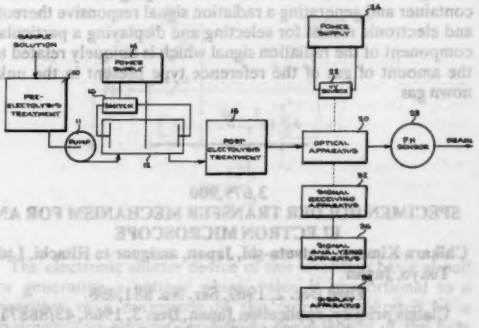
A beam of accelerated microparticles of substantially uniform velocity is passed transversely through an intense pulsed laser beam. In traversing the laser beam, the microparticles are thermally evaporated by the energy of the laser beam to produce either a beam or an expanding cloud of atomic particles.

3,679,898

PHENOL MONITORING METHOD AND APPARATUS

Dinsdale M. J. Compton, Del Mar, and Barry D. Epstein, San Diego, both of Calif., assignors to Gulf Oil Corporation

Filed Aug. 20, 1970, Ser. No. 65,604
Int. Cl. G01n *21/26*
U.S. Cl. 250—43.5 R 18 Claims



A method of and apparatus for determining the quantity of phenols in an aqueous solution after treating the solution to remove interfering impurities therefrom. The treated aqueous solution is electrolytically alternately converted so as to be either acidic or basic with preselected and controlled pH values. These acidic and basic solutions are subjected to ul-

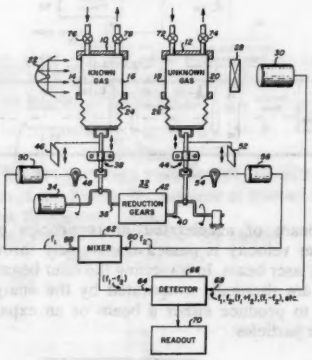
traviolet radiation at a preselected wavelength so that the amount of radiation passing therethrough at the preselected pH values can be measured. The measured amounts of ultraviolet radiation passing through the acidic and basic solutions are compared to determine the concentration of phenols in the aqueous solution.

3,679,899

NONDISPERSIVE GAS ANALYZING METHOD AND APPARATUS WHEREIN RADIATION IS SERIALLY PASSED THROUGH A REFERENCE AND UNKNOWN GAS

John Dimeff, San Jose, Calif., assignor to The United States of America as represented by the National Aeronautics and Space Administration

Filed April 16, 1971, Ser. No. 134,568
Int. Cl. G01n *21/26, 23/12*
U.S. Cl. 250—43.5 R **13 Claims**



A nondispersive gas analyzing means including a first variable volume container for receiving a quantity of a reference gas, a second variable volume container for receiving a quantity of an unknown gas to be analyzed, means for differentially varying the density of the gas in the first and second containers, means for causing radiation to pass serially through the first and second containers, a radiation detector for detecting the intensity of the radiation emerging from the second container and generating a radiation signal responsive thereof, and electronic means for selecting and displaying a particular component of the radiation signal which is uniquely related to the amount of gas of the reference type present in the unknown gas.

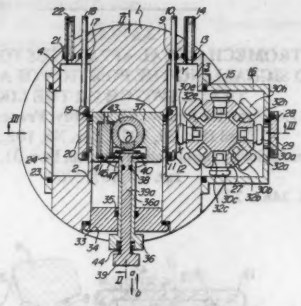
3,679,900

SPECIMEN HOLDER TRANSFER MECHANISM FOR AN ELECTRON MICROSCOPE

Chikara Kimura, Katsuta-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1969, Ser. No. 881,498
Claims priority, application Japan, Dec. 3, 1968, 43/88871
Int. Cl. H01j *37/26*; G01n *23/00*
U.S. Cl. 250—49.5 B **6 Claims**

A specimen chamber in an electron microscope and the like apparatus, which is so designed that a plurality of specimens are accommodated in a small, specimen storage and exchanging compartment adjacent to a specimen stage provided within a bodytube in a path of an electron beam, which compartment may be formed symmetrically on both sides of the specimen stage, and after evacuating the small compartment to vacuum, a vacuum sealing between the specimen stage and



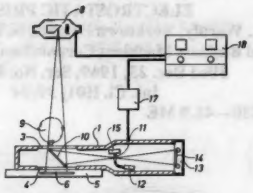
the small compartment is removed and a desired one of the plurality of specimens is transferred onto the specimen stage.

3,679,901

DEVICE FOR SIMULTANEOUS RADIOGRAPHICAL AND PHOTOGRAPHICAL EXAMINATIONS ON THE EYE AND THE ORBITAL REGION

Hugo Bogren, Bastra Frolunda; Gosta Elfstrom, Molndal, and Bjorn Tengroth, Goteborg, all of Sweden, assignors to Incentive Research & Development AB, Bromma, Sweden

Filed Oct. 5, 1970, Ser. No. 78,003
Claims priority, application Sweden, Oct. 6, 1969, 13717/69
Int. Cl. G03b *41/16*
U.S. Cl. 250—59 **6 Claims**



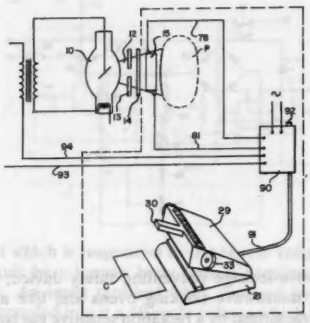
The invention concerns a device for the localization of intraocular foreign bodies and for exophthalmometry. The device can be mounted on any standard model of an X-ray stand usable for skull examination and makes it possible to take simultaneously a radiograph and a photograph of the orbital region of the patient. The photograph and the radiograph are obtained on transparent film material and with exactly the same magnification. The photograph and the radiograph are positioned upon each other in a correct relative position and viewed together in penetrating light. The combined radiograph and photograph reveales both the skeleton and the soft parts as well as any foreign radiopaque bodies in the orbital region and the anterior part of the skull, wherefore the position of any such foreign body can be easily determined or any exophthalmos can be easily detected and accurately measured respectively.

3,679,902

X-RAY IRRADIATION APPARATUS IN WHICH AN X-RAY SOURCE IS ENERGIZED UPON THE RECORDING OF IRRADIATION DOSAGE DATA

George S. Hurst; Norbert Thennard, and Karl A. Schneider, all of Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Oct. 13, 1969, Ser. No. 865,625
Int. Cl. G03b 41/16; H05g 1/44, 1/28
U.S. Cl. 250—65 R 15 Claims



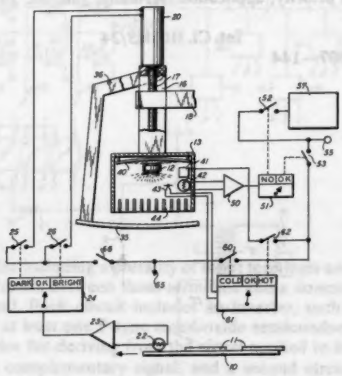
Apparatus for use in examining or treating patients with X-radiation or the like requires the making of a permanent record of the radiation applied. The operation of the radiation source is controlled in dependence upon the making of the record and the to radiation, or dose exposure is limited to a predetermined amount. A method is disclosed for safeguarding the patient and for producing a tangible record of the dose to which the patient is subjected.

3,679,903

APPARATUS FOR CONTROLLING THE INTENSITY OF RADIANT ENERGY ON A STRIP

Frank H. Blitchington, Jr., Greensboro, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,634
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 UV 3 Claims



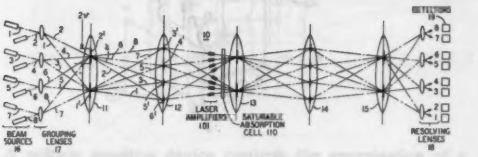
A strip of ultraviolet sensitive material and masks are moved past a divergent source of ultraviolet radiation to expose the strip through the masks. The intensity of ultraviolet radiation is measured adjacent to the strip and the source is moved toward or away from the strip to maintain an intensity between low and high limits of intensity. Interlock facilities at the source sense the color temperature of the source to disable the source moving facilities and source cooling facilities if the source is emitting insufficient ultraviolet radiation.

3,679,904

MULTIPLE BEAM TRANSMISSIONS SYSTEM WITH IMPROVED CROSS-TALK REDUCTION

Daniel Weiner, Hazlet, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 3, 1969, Ser. No. 803,739
Int. Cl. H04b 9/00
U.S. Cl. 250—199 5 Claims



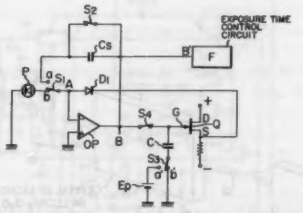
Improved cross-talk reduction with spatial multiplexing of a plurality of N beams in a beam transmission system comprising a sequence of confocally spaced lenses is accomplished by inserting saturable absorption cells in anti-nodal regions of the transmission system, at which regions the beams are spatially distinct. The beams are resolved at the output end into N separate beams. A similar arrangement can be employed using nonconfocally spaced lenses. In a pulse-code-modulation communication system, the saturable absorption cells sharpen the pulses time-wise as well as space-wise.

3,679,905

ELECTRONIC SHUTTER DEVICE COMPRISING LOGARITHMIC-ANTILOGARITHMIC CIRCUITRY

Asao Watanabe, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed March 29, 1971, Ser. No. 128,871
Claims priority, application Japan, April 14, 1970, 45/31258
Int. Cl. G01j 1/00, 1/52; H01j 39/12
U.S. Cl. 250—206 1 Claim

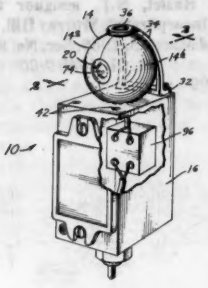


The electronic shutter device of this invention has a circuit for generating a voltage whose value is proportional to a logarithm of a magnitude of the current generated by a photosensitive element for sensing the intensity of the light from an object. It is so designed that said voltage generating circuit is used also for a circuit for controlling a shutter speed by the antilogarithmic transformation. Thus the variation in temperature and aging chracteristics, which are inherent if the separate circuits were provided, of a logarithmic transformation component can be corrected automatically. Further, an element adopted to store therein the intensity of light from the object is placed in the logarithmic transformation circuit.

3,679,906
LIGHT-OPERATED CONTROL DEVICE

Clifford E. Myers, Forest Grove, Oreg., assignor to Xercon, Inc., Portland, Oreg.

Filed March 25, 1970, Ser. No. 22,611
Int. Cl. H01j 3/14
U.S. Cl. 250—239 1 Claim

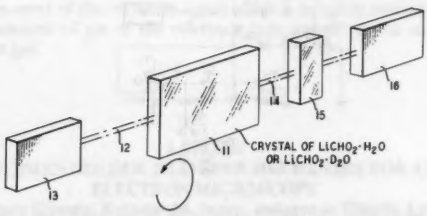


A light-operated control device including a spherical housing mounted on a second housing for universal swiveling movement relative thereto. An arm extending out from the second housing overlies the sphere and is clamped thereagainst to secure the sphere in any selected position. A photocell mounted in the sphere has a light-sensitive side which faces out through an aperture in a side of the sphere. A light-channeling passage having deflector surfaces along its sides extends between the aperture and the light-sensitive side of the photocell. This passage inhibits ambient light from striking the photocell. The photocell is connected to control circuitry in the second housing by elongated flexible conductors which permit free swiveling of the sphere.

3,679,907
LITHIUM FORMATE NONLINEAR DEVICES

William Adam Bonner, Scotch Plains; Shobha Singh, Summit, and Le Grand Gerard Van Uitert, Morris Township, Morris County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 3, 1970, Ser. No. 60,697
Int. Cl. H03f 7/00
U.S. Cl. 307—88.3 5 Claims

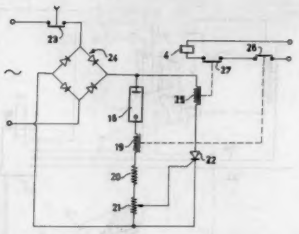


The hydrated and deuterated forms of lithium formate are found to be useful nonlinear materials for use over a wavelength range including the visible spectrum. While conversion efficiency is inferior to that of lithium niobate or barium sodium niobate, resistance to radiation damage is significantly greater. Operation at power levels in excess of 10^6 watts/cm^2 has resulted in no perceptible damage. These materials are suitably incorporated in second harmonic generators as well as in other parametric devices.

3,679,908
SAFETY DEVICE FOR SENSING PREVENTING RADIATION LEAKAGE FROM MICROWAVE-PRODUCING APPARATUS

Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pordenone, Italy

Filed Dec. 15, 1970, Ser. No. 98,378
Claims priority, application Italy, Jan. 17, 1970, 19510 A/70
Int. Cl. H01h 35/00
U.S. Cl. 307—117 3 Claims



A microwave-leakage preventing safety device, especially adapted for microwave cooking ovens and like appliances, which is characterized by a radiation sensitive gas lamp (or gas diode) placed in the vicinity of the point at which radiation leakages are expected, for example the oven door. The gas lamp is a part of an electric safety circuit which cuts off the current feed to the microwave generator proper whenever the detecting lamp has radiations impinging thereon.

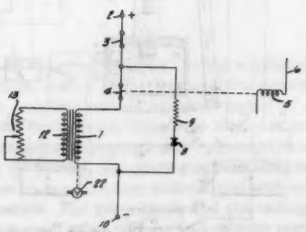
ERRATUM

For Class 307—133 see:
Patent No. 3,679,988

3,679,909
HYDRAULIC DRIVE FOR ELECTRIC SWITCHES

Karl-Heinz Picard, and Joachim Beierer, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 29, 1971, Ser. No. 110,923
Claims priority, application Germany, Jan. 30, 1970, P 20 05 027.5
Int. Cl. H01h 3/24
U.S. Cl. 307—144 5 Claims

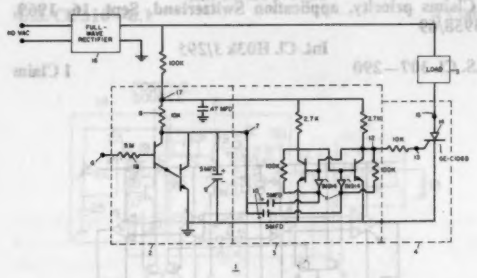


The open time of an electrically controlled valve for the hydraulic drive of an electrical switch is prolonged according to the invention, by providing the excitation coil of the valve with a circuit wherein a rectifier produces a short circuit which delays the deenergization of the valve coil.

3,679,910
TOUCH CONTROL SWITCH

James M. Williams, Waltham, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed April 13, 1971, Ser. No. 133,591
Int. Cl. H03k 17/00
U.S. Cl. 307—252 W 5 Claims

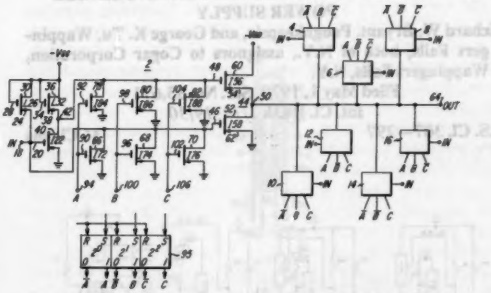


A circuit which is responsive to sixty cycle voltage coupled to the circuit by a human body from a proximate 60 cycle power line. An input terminal when touched by a person's finger has coupled into it a 60 cycle voltage which is amplified and causes the electronic circuitry to assume either a conducting or non-conducting state at its output which is maintained after removal of the finger from the terminal. The output of the circuit is connected to a controlled device which is controlled by the circuit output state.

3,679,911
DECODER CIRCUIT

Melvin Murray Kaufman, Willingboro, N.J., assignor to RCA Corporation

Filed May 28, 1970, Ser. No. 41,324
Int. Cl. H03k 17/00, 19/24
U.S. Cl. 307—251 3 Claims

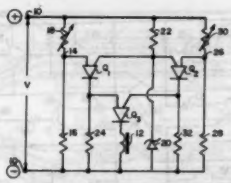


A decoder including a plurality of input terminals and a plurality of circuits between these terminals and a common output terminal. Each circuit includes an inverter, such as one formed of at least one P-type metal-oxide semiconductor (P-MOS) device for deriving from the signal applied to its input terminal a complementary signal, and a second circuit. The latter may include two PMOS devices the conduction paths of which are connected in series, one such path controlled by the complementary signal and the other by the input signal, and an output terminal at the common connection of these two devices. In response to a group of control signals on one value, one circuit is placed in its operating state and each other circuit is rendered inoperative by essentially opening the series connected conduction paths of the two PMOS devices of the circuit.

3,679,912
OVERVOLTAGE-UNDERVOLTAGE SENSOR

Mircea M. Tenenbaum, New Haven, Conn., assignor to Allied Control Company, Inc., Plantsville, Conn.

Filed June 9, 1971, Ser. No. 151,190
Int. Cl. H03k 5/20
U.S. Cl. 307—235 17 Claims

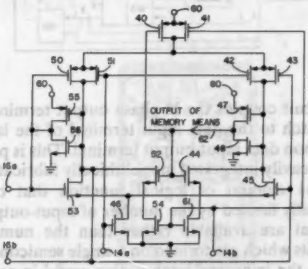


A voltage sensitive device controls the energization of a relay or other load so as to switch it between energized and deenergized states as the sensed voltage passes a low or undervoltage limit and another high or overvoltage limit. Detection of the high and low limits is achieved by two voltage detecting circuits, one for each limit, and a comparator circuit responsive to the outputs of the detecting circuits performs the actual switching of the load between its energized and deenergized states. The two detecting circuits and the comparator circuit are each comprised principally of a programmable unijunction transistor or other three-terminal semiconductor device of generally similar characteristics.

3,679,913
BINARY FLIP-FLOP EMPLOYING INSULATED GATE FIELD EFFECT TRANSISTORS AND SUITABLE FOR CASCADED FREQUENCY DIVIDER OPERATION

James W. Foltz, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 14, 1970, Ser. No. 71,889
Int. Cl. H03k 3/26
U.S. Cl. 307—279 12 Claims



A toggle flip-flop suitable for cascaded operation is shown with performs a sequential logic function. More specifically, the future state of the flip-flop depends on its past occurrences and therefore the disclosed flip-flop performs a memory function. This invention realizes the toggle function through an interconnection of two basic functional blocks. One block comprises a memory means and the other an output transfer means. The invention herein described is a circuit utilizing complementary insulated gate field effect transistors which perform the toggle flip-flop function. The circuit requires an

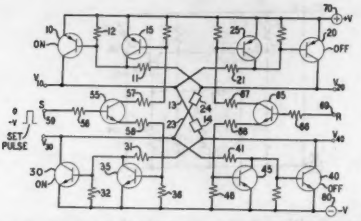
input excitation (a voltage) and its inverse, and its operation is independent of the input width and rise time.

3,679,914

REGENERATIVE CIRCUIT COMPRISING COMPLEMENTARY TRANSISTOR PAIRS

Herbert Anton Schneider, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed April 13, 1971, Ser. No. 133,518
Int. Cl. H03k 3/286, 3/284
U.S. Cl. 307—288 11 Claims



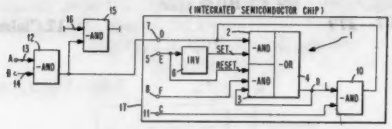
Improved triggering circuitry is incorporated into a regenerative circuit comprising complementary transistor pairs. When the circuit is triggered, a switching sequence is established in which both ON transistors are turned OFF before either OFF transistor turns ON. Potential transistor and power supply damage during the state transition period are thereby avoided.

3,679,915

POLARITY HOLD LATCH WITH COMMON DATA INPUT-OUTPUT TERMINAL

Ronald J. Kriger, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed March 4, 1971, Ser. No. 121,098
Int. Cl. H03k 3/12
U.S. Cl. 307—289 16 Claims



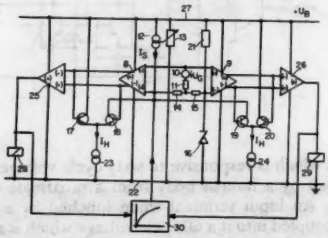
A logical circuit couples the in-phase output terminal of a polarity hold latch to the data input terminal of the latch to provide a common data input-output terminal. This is particularly useful in heavily integrated monolithically fabricated circuits where the amount of logical function that can be achieved is usually limited by the number of input-output pin connections that are available rather than the number of transistor circuits which are formed on a single semiconductor chip. However, the improved latch is also useful in reducing the number of input-output terminals in printed circuit cards for densely packaged electronic circuits since they also encounter pin limitations rather than electronic component limitations Gating means external to the semiconductor chip (or card) and in some instances gating of the logic circuit determine the time intervals when good input data and good output data exist on the common input-output terminals. In some instances, output data can be made available sooner than otherwise possible by careful use of the input data itself as good output data during the set time of the latch; i.e. the input signal to the latch is available sooner than its output and with the common input-output terminal its input signal can be used as an output signal before the latch output becomes available—an input to output signal delay of zero.

3,679,916

CONTROLLED HYSTERESIS INTEGRATED CIRCUIT SWITCHING CIRCUIT

Holger Siebers, Zug, Switzerland, assignor to Landis & Gyr AG, Zug, Switzerland

Filed July 17, 1970, Ser. No. 55,843
Claims priority, application Switzerland, Sept. 16, 1969, 13958/69
Int. Cl. H03k 3/295
U.S. Cl. 307—290 1 Claim



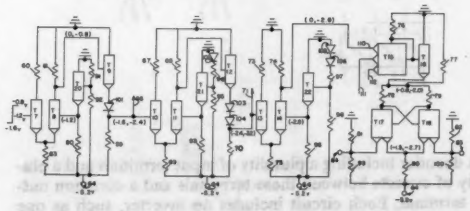
A controlled hysteresis integrated circuit switching circuit wherein a bias signal and an input signal are connected in opposition across the input of an operational amplifier. A current source establishes the bias signal across a bias resistor. When the input signal overcomes the bias signal, the amplifier begins to change state. The output of the amplifier controls an active feedback network and, as the amplifier changes stage, a predetermined amount of current is switched to the bias resistor in opposition to that supplied by the current source to reduce the magnitude of the bias signal.

3,679,917

INTEGRATED CIRCUIT SYSTEM HAVING SINGLE POWER SUPPLY

Richard W. Bryant, Poughkeepsie, and George K. Tu, Wappingers Falls, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed May 1, 1970, Ser. No. 33,671
Int. Cl. H03k 1/14, 19/30
U.S. Cl. 307—297 31 Claims



An integrated circuit system having a single power supply. Rather than using multiple voltage sources, a single voltage source is used from which multiple reference voltages are derived. Multiple reference voltages can be used due to the incorporation of temperature compensation circuits.

3,679,918

SELF-EXCITING TYPE HIGH VOLTAGE GENERATING APPARATUS UTILIZING PIEZOLECTRIC VOLTAGE TRANSFORMING ELEMENTS

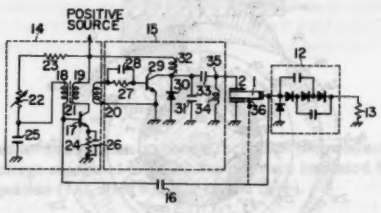
Inoue Keizi, Yokohama, Japan, assignor to Denki Onkyo Company Limited, Tokyo, Japan

Filed June 19, 1970, Ser. No. 47,759

Claims priority, application Japan, Dec. 30, 1969, 44/105474

Int. Cl. H01v 7/00

U.S. Cl. 310—8.1 4 Claims



In a self-exciting type high voltage generating apparatus utilizing a piezolectric voltage transforming element driven by an oscillator, a capacitive feedback circuit is provided between the output of the piezolectric voltage transforming element and the oscillator to lock the oscillation frequency of the oscillator to the resonance frequency of the piezolectric voltage transforming element.

3,679,919

CERAMIC RESONATORS

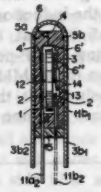
Noboru Ichinose; Katsunori Yokoyama, both of Yokoyama, and Hisashi Nishikawa, Shizuoka-ken, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo and Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 5, 1971, Ser. No. 140,482

Claims priority, application Japan, May 13, 1970, 45/45922

Int. Cl. Holv 7/00

U.S. Cl. 310—9.4 5 Claims



In a ceramic resonator of the type comprising an outer casing, a disc shaped ceramic resonator element, a pair of resilient terminal members on both sides of the resonator element, each including a projection for supporting the resonator element, and a split inner casing contained in the outer casing for containing the resonance element and terminal members, one half of the split inner casing is provided with an annular rib on its mating surface and a cylindrical recess inside the annular rib, and the other half of the split inner casing is provided with a cylindrical recess on its mating surface for receiving the annular rib whereby when the resonator and the terminal members are assembled in a space defined by the recesses of the inner casing halves, the resonator element is resiliently supported between the projections of the terminal members at its geometrical center.

3,679,920

SUPERCONDUCTING DYNAMO-ELECTRIC MACHINES

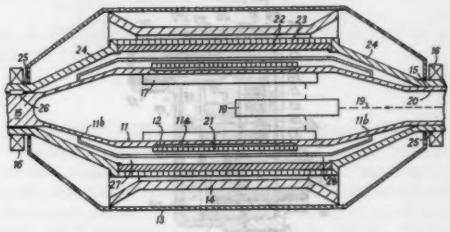
Robert Beattie MacNab, and Brian Edward Mulhall, both of Newcastle upon Tyne, England, assignors to International Research & Development Company, Newcastle upon Tyne, England

Filed April 1, 1971, Ser. No. 130,242

Claims priority, application Great Britain, April 9, 1970, 17,007/70

Int. Cl. H01v 11/00

U.S. Cl. 310—10 21 Claims



An A.C. generator has a superconducting D.C. field winding on the rotor and a multi-phase A.C. winding on the stator. To prevent A.C. loss in the superconducting winding an electromagnetic flux screen is interposed between the windings and is secured to the rotor. In a preferred construction the flux screen is part of an outer rotor cylinder of strong mechanical construction which operates at ambient temperature. The outer rotor cylinder is coupled for rotation with an inner cylinder which carries the superconducting winding, is of relatively light construction to minimize heat inflow and is separated from the outer cylinder by a vacuum space.

3,679,921

APPARATUS WITH AN OSCILLATING ARMATURE MOTOR

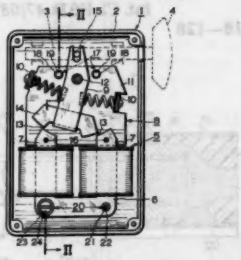
Reinhard Jank, Klagenfurt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed March 1, 1971, Ser. No. 119,520

Claims priority, application Austria, March 2, 1970, A1908/70

Int. Cl. H02k 1/34

U.S. Cl. 310—37 8 Claims

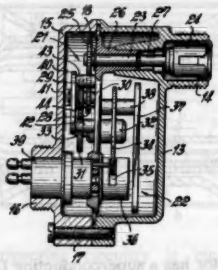


Apparatus including a housing, a tool movable in a guide in the housing, and an electric motor of oscillating armature type mounted in the housing and arranged to drive the tool, the motor having a stator, a carrier fixed to the stator at the pole end thereof, and an oscillating armature lever pivoted on the carrier, the carrier being fixed relatively to the housing by carrier positioning means, and the end of the stator remote from the oscillating armature lever being held to the housing by a clamp connection which permits forced relative movement between the stator and the housing.

3,679,922
HOUSING ARRANGEMENT FOR AN APPARATUS TRANSFORMING ROTARY SPEED INTO ELECTRIC SIGNALS

Horst Rahn, Villingen, Germany, assignor to Kienzle Apparate GmbH, Villingen/Scharzwald, Germany

Filed April 6, 1971, Ser. No. 131,739
Claims priority, application Germany, April 7, 1970, G 70 12 543.8
Int. Cl. H02k 5/00
U.S. Cl. 310—89 9 Claims



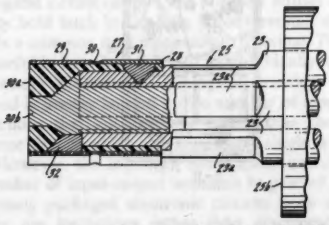
The housing of an apparatus transforming the rotary speed of the motor shaft of a motorcar into electric signals is constructed divisible and shaped to permit easy attachment to the gear casing of the motorcar.

A housing envelopes an adapter transmission and an electromechanical transducer, and has a tapered end formed by converging walls tangential to a connector tube projecting from the housing. The tapered housing end fits into a confined space on a transmission casing when the connector tube is attached to an other connecting tube projecting from the transmission casing so that a coupling in the connector tube connects the transmission in the casing with the adapter transmission in the housing.

3,679,923
AUTOMATIC WORK REPEATING MECHANISM

Kenneth B. Harper, Winnetka, and Hubert J. Tremblay, Roselle, both of Ill., assignors to Harper Associates, Inc., Winnetka, Ill.

Division of Ser. No. 852,538, Aug. 25, 1969. This application April 9, 1971, Ser. No. 132,741
Int. Cl. H02k 47/08
U.S. Cl. 310—128 5 Claims

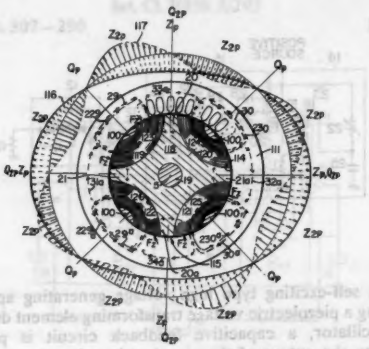


A direct current electrical motor haVing a commutator formed of conductor elements and spaced rings thereon with first brushes engaging the elements and additional brushes engaging the rings; the method of operating a direct current motor which involves delivering direct current pulses to some commutator elements and to all of said elements to operate and bias the direction of said motor and operating a direct current motor to produce recordable signals.

3,679,924
SYNCHRONOUS RELUCTANCE MOTORS AND METHOD OF STARTING

Robert W. Menzies, Winnipeg, Manitoba, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Jan. 19, 1971, Ser. No. 107,635
Int. Cl. H02k 19/00
U.S. Cl. 310—163 8 Claims



Improved synchronous-running, induction-starting reluctance motors having rotors exhibiting magnetic anisotropy are designed with a large ratio of direct axis reactance X_D to quadrature-axis reactance X_Q, and low values of winding resistance R_s and leakage reactance X_s, to obtain high efficiency synchronous-running, but the rotor eliminates most of the known damper windings and instead incorporates a vestigial cage structure limiting damping currents to diametral planes around the rotor core, and a number of parameters are drastically changed from conventional practise, to obtain a high value of asynchronous torque with a P-pole stator winding connection over the speed range $s_p = 1.0$ to about $s_p = 0.5$, but providing a rapid negative change of torque as the rotor speed approaches $s_p = 0.5$, becoming negative beyond half-synchronous speed. Very large inertial loads may be accelerated without regard to time interval with moderate starting currents during the induction-starting mode, and the motor would run indefinitely at half-synchronous speed. Reconnecting the winding to 2P-pole number enables the revolving rotor to lock on to the MMF field which is rotating substantially synchronously with it, thus converting the motor to a synchronous reluctance machine.

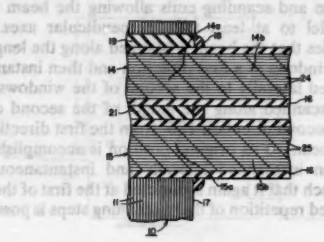
3,679,925
ELECTRICAL APPARATUS WITH CORONA SUPPRESSION MEANS

Emil M. Fort, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 2, 1971, Ser. No. 111,811
Int. Cl. H02k 15/12
U.S. Cl. 310—196 6 Claims

In electrical apparatus in which high voltages may occur between two closely spaced conductive members, at least one of which is insulated by a coating of insulation, and in which the electric field gradient parallel to the surface of this insulated conductor in some area is sufficient to cause surface corona, an additional member of electrical insulation is introduced to this area to form a new insulation surface with a lower field gradient, thus suppressing surface corona. To suppress end corona between the end portion of a stator coil and

the stator core of a dynamoelectric machine, a collar encircling the coil at the face of the core is provided in accordance



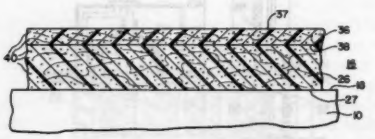
with this invention. The invention facilitates the production of high voltage machines in which the coils are insulated by post impregnation (i.e., after winding on the core).

3,679,926

DYNAMOELECTRIC MACHINE WITH IMPROVED SIDE FILLERS FOR COIL RETENTION

Leonard B. Simmonds, and John C. Botts, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 20, 1971, Ser. No. 108,040
Int. Cl. H02k *3/48, 3/36*
U.S. Cl. 310—214 **7 Claims**



For retention of coils in cores of large dynamo-electric machines, a side filler is used between the insulated coil and the core slot wall with different surface characteristics on each side of the side filler. The surface adjacent the slot wall has a coefficient of friction that is relatively high compared with the coefficient of friction of the surface adjacent the coil. The surface adjacent the slot wall also tends to have a greater degree of adhesion with the slot wall under heat and pressure, than does the surface of the side filler adjacent the coil. These qualities can be provided by employing as the side filler a member having a surface comprising a fluorocarbon polymer adjacent the coil while the other surface includes a different, more conventional, resinous material. The combination of the invention permits free movement of the coil during thermal cycling without tending to remove the side filler from the slot and without damaging the coil insulation.

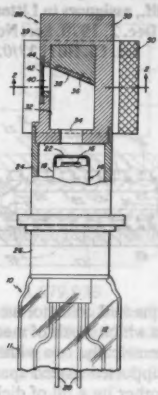
3,679,927

HIGH POWER X-RAY TUBE

Thomas D. Kirkendall, Potomac, Md., assignor to The Machlett Laboratories, Incorporated, Springdale, Conn.

Filed Aug. 17, 1970, Ser. No. 64,387
Int. Cl. H01j *35/00*
U.S. Cl. 313—59 **3 Claims**

An X-ray tube with a metal window and having increased power loading capabilities without undesirable overheating of the window, this being achieved by the use of a magnet which is arranged so that magnetic field lines pass over the window



surface to reduce bombardment of the window with secondary or back-scattered electrons from the anode.

ERRATUM

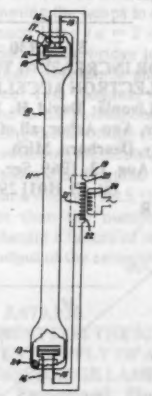
For Class 313—217 see:
Patent No. 3,679,474

3,679,928

HIGH INTENSITY FAR U.V. RADIATION SOURCE

Peter D. Johnson, Schenectady, N.Y., assignor to General Electric Company

Filed June 26, 1970, Ser. No. 50,106
Int. Cl. H01j *61/12*
U.S. Cl. 313—225 **12 Claims**



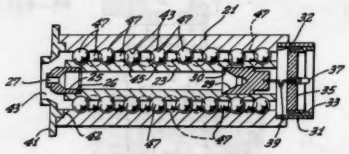
A far U.V. radiation source emitting high intensity of U.V. wavelengths principally shorter than 2,300 A.U. includes a low pressure of mercury vapor in the range 10^{-3} to 0.75 torr under operating conditions in an ambient of a noble gas at a pressure of 0.5 to 25 torr. During operation, lamp current is very high, in range of 0.5 to 25 ampere/cm.^{2}, emitting strongly at 1,849 and 1,942 A.U.

3,679,929

CERAMIC BALL INSULATED DEPRESSED COLLECTOR FOR A MICROWAVE TUBE

Robert Leander Holm, Sunnyvale, and John Wesley Ashford, Altos, both of Calif., assignors to Litton Systems, Inc.

Filed Dec. 2, 1970, Ser. No. 94,387
Int. Cl. H01j 23/02
U.S. Cl. 315—5.38 18 Claims



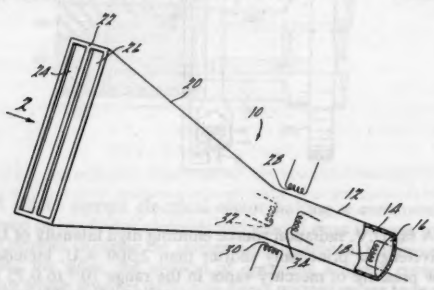
An improved depressed collector assembly for a microwave tube is described in which a pair of metal cylindrical members are arranged concentrically, one within the other, and are in that relationship supported spaced apart and electrically insulated from one another by a fill of dielectric ceramic balls or spheres, suitably aluminum oxide or beryllium oxide, located within and about and along the space between the cylinders. The spheres are maintained therein embedded in indentations in the opposed walls of the cylindrical members. The inner cylinder forms the major part of the depressed collector electrode which is in the tube maintained at a high voltage, and the outer cylinder forms the collector shield maintained at a much lower voltage, normally ground. The ceramic spheres are dielectric and, hence, provide voltage insulation and are good heat conductors and, hence, form a thermal path for removing heat dissipated at the collector during operation of the tube. In addition, a novel method of fitting such ceramic spheres between the inner and outer metal cylinders is described in which the space between the concentric cylinders is first filled with the relatively incompressible ceramic spheres, and the outer surface of the inner cylinder is forced outward to embed said spheres primarily in that outer surface while the inner surface of the outer cylinder is forced inwardly to embed the spheres primarily in the inner surface of the outer cylinder so that the spheres are seated in place and cannot move and, likewise, relative movement between the inner and outer cylinders is precluded.

3,679,930

METHOD FOR INCREASING THE OUTPUT OF AN ELECTRON ACCELERATOR

Alex D. Colvin, Livonia; David H. McNitt, Royal Oak, and Allen H. Turner, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 13, 1969, Ser. No. 849,705
Int. Cl. H01j 29/76
U.S. Cl. 315—21 R 6 Claims



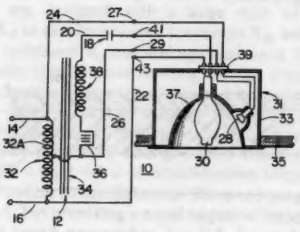
A method of increasing the energy output of an electron accelerator by scanning the electron beam produced in the accelerator in a manner so that excessive heat build-ups do not occur at the electron permeable window structure through which the beam passes to exit the accelerator. This method is used in conjunction with an accelerator having at least two elongate, electron permeable windows arranged in a side-by-side orientation and scanning coils allowing the beam to be scanned parallel to at least two, perpendicular axes. The method provides that the beam is scanned along the length of a first of the windows in a first direction and then instantaneously is scanned laterally to the second of the windows. The beam then is scanned along the length of the second of the windows in a second direction 180° from the first direction. A return of the beam to its original position is accomplished as the beam then is scanned laterally and instantaneously a second time such that it again is directed at the first of the windows. Unlimited repetition of these scanning steps is possible.

3,679,931

APPARATUS FOR OPERATING ELECTRIC DISCHARGE LAMPS AND AUXILIARY LIGHTING LAMPS

Walter F. Powell, Danville, Ill., assignor to General Electric Company

Continuation of Ser. No. 648,367, June 23, 1967, abandoned.
This application Sept. 16, 1970, Ser. No. 72,891
Int. Cl. H05b 37/04, 41/46
U.S. Cl. 315—92 5 Claims



A ballast for mercury vapor lamps including an auxiliary incandescent lamp for providing illumination immediately after power to the ballast is momentarily interrupted during the hot restart condition of the mercury vapor lamp and also during the warm-up condition of the mercury vapor lamp. The ballast includes a high leakage reactance transformer having its secondary connected in circuit with the mercury vapor lamp. The auxiliary incandescent lamp is energized from a portion of the primary or from a separate winding inductively coupled with the primary. A photo-cell and switch arrangement, responsive to the light level of the electric discharge lamp, turns on the incandescent lamp during the hot restart condition of the mercury vapor lamp.

3,679,932

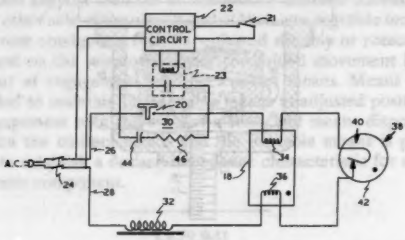
FLUORESCENT LAMP IDLING CIRCUIT

James P. Murphy, Stamford, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 19, 1971, Ser. No. 107,795
Int. Cl. H05b 39/04
U.S. Cl. 315—106 4 Claims

A circuit is described for operating a fluorescent lamp at a low power consumption idling level. The circuit provides a

capacitive impedance in series between the fluorescent lamp and an AC supply. The capacitive impedance is selected to



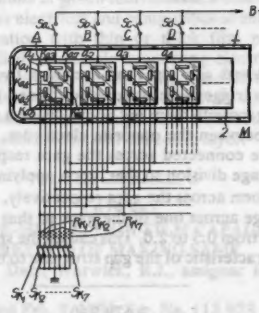
reduce the current flow through the lamp to a low idling level, yet full illumination may be quickly and reliably restored by effectively removing the capacitive impedance.

3,679,933

DISPLAY SYSTEM

Yasuo Nakada, and Hideo Takita, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 22, 1969, Ser. No. 886,812
Claims priority, application Japan, Dec. 23, 1968, 43/94737
Int. Cl. H05b *37/00*
U.S. Cl. 315—169 TV 8 Claims



A display system using a gaseous glow indicator tube having a plurality of indicator electrode units such as seven, for instance, each unit including a plurality of cathodes and having anodes disposed opposite the indicator electrodes. The indicator electrode units and the anodes are contained in an envelope and a driving circuit is provided for selectively feeding current to the indicator electrode units in such a manner that adjacent ones are not caused to glow successively.

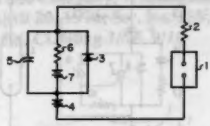
3,679,934

AUTOMATIC RESTARTING LASER POWER SUPPLY

John N. Dukes, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 5, 1970, Ser. No. 8,772
Int. Cl. H05b *41/14*
U.S. Cl. 315—200 R 4 Claims

A gas laser is connected in series with a diode and a power supply for maintaining the discharge in the laser. When the laser extinguishes, a capacitor connected in parallel with the



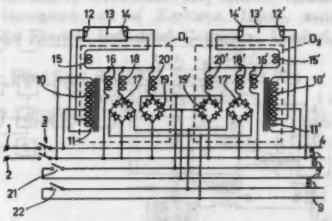
diode is charged by an additional power supply to provide the additional voltage necessary to restart the laser.

3,679,935

ARRANGEMENT FOR DIMMING AT LEAST TWO PARALLEL-ARRANGED DISCHARGE LAMPS

Jean-Marie Jacques, Bobigny, and Maurice Beniada, Luneville, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 24, 1970, Ser. No. 49,371
Claims priority, application France, June 24, 1969, 6921174
Int. Cl. H05b *27/00, 11/16*
U.S. Cl. 315—201 10 Claims



An AC supply system for two or more parallel discharge lamps with means for dimming the lamps in steps. There are *n* ballast impedances for each lamp ($n = 2$ or more) and n-1 diode bridges therefor. Each diode bridge is connected in series with at least one ballast impedance and in parallel with another ballast impedance. Two diagonal terminals of each diode bridge an connected to the corresponding diagonal terminals of the corresponding diode bridge for another one of the lamps. There are n-1 switching elements arranged to selectively interconnect the aforesaid diagonal terminals of the respective diode bridges in a manner such that the number of dimming steps is greater than the number of ballast impedances per lamp and wherein a failure of one or more lamps does not affect the light output of the remaining lamps.

3,679,936

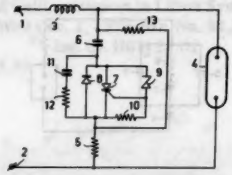
CIRCUIT ARRANGEMENT FOR THE IGNITION AND ALTERNATING CURRENT SUPPLY OF A GAS AND/OR VAPOR DISCHARGE LAMP

Jozef Cornelis Moerkens, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed March 11, 1970, Ser. No. 18,546
Claims priority, application Netherlands, March 22, 1969, 6904456
Int. Cl. H05b *37/00*
U.S. Cl. 315—205 12 Claims

An ignition circuit for a discharge lamp comprising a ballast impedance in series with the lamp across the AC supply terminals. A capacitor and an SCR connected in series across the

lamp electrodes. A diode connected anti-parallel to the SCR. A zener diode between the SCR anode and gate electrodes.



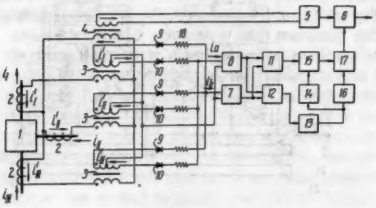
The series circuit, including the ballast impedance, the capacitor, and the SCR and diode connected in anti-parallel, is under critically damped.

3,679,937

METHOD OF AND APPARATUS FOR BLOCKING PHASE-COMPARISON PROTECTION

Evgeny Mefodievich Ulyanitsky, and Eduard Vasilievich Podgorny, both of Rostov-na-Donu, U.S.S.R., assignors to Novocherkassky Ordena Trudovogo Krasnogo Znameni Politekhmichesky Institute imeni Sergo Ordzhonikidze, Novicherkassk, U.S.S.R.

Filed Nov. 24, 1970, Ser. No. 92,402
Int. Cl. H02h 3/28
U.S. Cl. 317—27 R 1 Claim



The invention is related to a method of and an apparatus for the blocking of phase-comparison protection.

According to the invention, the method consists in that the control signals formed from separately summed incoming and outgoing currents are monitored during a predetermined time interval since the very beginning of the first half-cycle of a fault and a blocking signal is applied to the starting element of the protection apparatus only when both these signals are present, thereby preventing the protected plant from being disconnected on an external short-circuit.

The method ensures reliable selectivity and cuts down operate time of the protection.

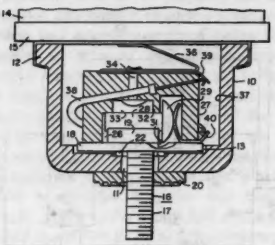
3,679,938

ELECTRICAL DISCONNECTOR

Charles H. Carothers, and Robert M. Kelly, both of Bloomington, Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 29, 1970, Ser. No. 76,573
Int. Cl. H02h 1/00
U.S. Cl. 317—61 6 Claims

A disconnector for lightning arresters is provided with a simplified configuration wherein a cup-shaped breakable housing has within it a substantially concentric insulating support member that is recessed to accommodate an explosive containing metal case resting on an end portion of a ground terminal. The insulating support defines a fixed spark gap spacing between the metal case and an electrode making direct contact with a lightning arrester. A flexible grading resistor is provided in parallel with the spark gap and comprises



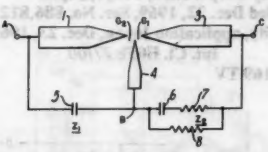
a flexible insulating core on which is wound a plurality of turns of resistive wire, the resistor encircling the insulating support in the space between it and the inner housing wall.

3,679,939

LIGHTNING ARRESTER

Tohei Nitta; Yoshikazu Shibuya, and Yukio Fujiwara, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed March 1, 1971, Ser. No. 120,029
Int. Cl. H02h 1/04
U.S. Cl. 317—62 2 Claims



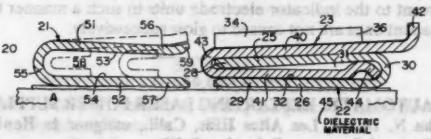
The disclosed gap structure includes two opposed electrodes and a triggering electrode positioned between them to define two gaps with them but not to divide a main electric arc developed between the opposite electrodes. Two impedance elements are connected across the gaps respectively for purpose of voltage division so that, upon applying voltages of the same waveform across the gaps respectively, a ratio of a sparkover voltage across one of the gaps to that across the other gaps ranges from 0.5 to 2.0. This causes the sparkover voltage-to-time characteristic of the gap structure to be flat.

3,679,940

TRIMMER CAPACITOR

Richard J. Newman, West Orange; Martin A. Mittler, Parsippany, and Martin J. Blickstein, West Caldwell, all of N.J., assignors to Voltronics Corporation, Hanover, N.J.

Filed Jan. 21, 1971, Ser. No. 108,294
Int. Cl. H01g 5/14
U.S. Cl. 317—101 C 20 Claims



A variable electronic component having a plurality of unmounted coacting elements adaptable in particular for attachment in sub-miniature electronic circuits on a supporting

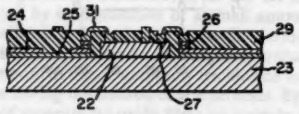
substrate includes, at least one conductive contact means connected to one side of the circuit and adjustable means independent of and in spaced relation to said contact means for operative coaction therewith. The adjustable means has at least one support member of conductive material connected to the other side of the circuit and at least one movable means in current conducting relation with and slidably or rotatably disposed on the support member for guided movement into and out of engagement with the contact means. Means are provided to maintain the movable means in adjusted position of engagement with the contact means, and means disposed between the contact means and the movable means is provided to establish a desired impedance characteristic for said electronic component.

3,679,941

COMPOSITE INTEGRATED CIRCUITS INCLUDING SEMICONDUCTOR CHIPS MOUNTED ON A COMMON SUBSTRATE WITH CONNECTIONS MADE THROUGH A DIELECTRIC ENCAPSULATOR

Donald J. LaCombe, De Witt, and Guy L. Babcock, North Syracuse, both of N.Y., assignors to General Electric Company

Filed Sept. 22, 1969, Ser. No. 859,869
Int. Cl. H01l *19/00*
U.S. Cl. 317—101 A **8 Claims**



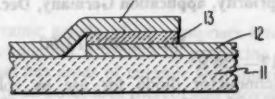
Integrated circuits in which individual semiconductor chips, exhibiting diverse electrical and compositional characteristics, may in combination with thin or thick film passive components be applied to a single supporting electric substrate. The chips and conductive patterns deposited on the substrate being encapsulated in a dielectric material, with electrical connections made to said chips and conductive patterns through openings formed in said dielectric layer.

3,679,942

METAL-OXIDE-METAL, THIN-FILM CAPACITORS AND METHOD OF MAKING SAME

Francis Patrick Daly, Warwick, R.I., assignor to RCA Corporation

Filed Feb. 9, 1971, Ser. No. 113,973
Int. Cl. H01g *3/075*
U.S. Cl. 317—230 **5 Claims**



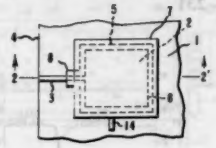
In the manufacture of a metal-oxide-metal (MOM) thin-film capacitor, the layer of dielectric material, such as silicon dioxide, is deposited, by thermal decomposition of a silicon compound, over a conductive ground plate; and the Q factor (or quality factor) of the capacitor is enhanced and the dissipation factor of the silicon dioxide is reduced by low-temperature densification of the silicon dioxide.

3,679,943

CAPACITOR ASSEMBLY HAVING ELECTRODE AND DIELECTRIC LAYERS OVERLAPPED FOR SEALING

Michael J. Bergmann, Nurnberg, Germany, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed April 20, 1971, Ser. No. 135,703
Int. Cl. H01g *3/06, 9/10*
U.S. Cl. 317—230 **5 Claims**



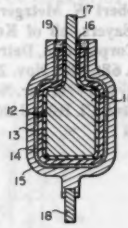
In an electrical capacitor with electrodes and an intermediate dielectric layer successively printed on a dielectric substrate, the improvement of so disposing the electrodes to minimize exposure of the dielectric layer to the atmosphere, and thus decrease the moisture sensitivity of the capacitor. Optionally, all exposed metallizations may be covered by a layer of solder.

3,679,944

SOLID CAPACITOR WITH ELECTROLYTE CONTAINING ORGANIC MATERIAL AND METHOD FOR PRODUCING SAME

Susumu Yoshimura; Yoshimasa Ito; Shirow Asakawa, and Katsue Hasegawa, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Sept. 20, 1971, Ser. No. 181,971
Int. Cl. H01g *9/05*
U.S. Cl. 317—230 **11 Claims**

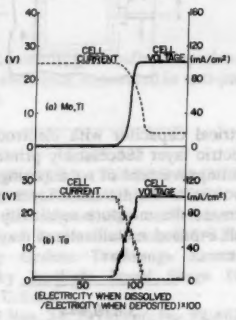


A capacitor and method for preparing the same, which includes a solid electrolyte containing a 7,7,8,8-tetracyanoquinodimethane complex and a polymer which does not dissolve the 7,7,8,8-tetracyanoquinodimethane complex but disperses the same. The capacitor comprises an oxide coated anode electrode, a cathode electrode spaced from the oxide coated anode electrode and a solid electrolyte containing the 7,7,8,8-tetracyanoquinodimethane complex, and the polymer up to 40 percent by weight of the solid electrolyte and having the 7,7,8,8-tetracyanoquinodimethane complex dispersed therein. The method comprises the steps of preparing an electrode having a dielectric oxide film on its surface and a second electrode, pulverizing a 7,7,8,8-tetracyanoquinodimethane complex into fine particles having particle size of 0.1 to 1 μm, mixing the fine particles of the 7,7,8,8-tetracyanoquinodimethane complex and a solvent for the polymer for dispersing the fine particles of the tetracyanoquinodimethane complex into a solution by a suitable method, coating the oxide film with the dispersed solution, evaporating the solvent for forming a solid electrolyte layer on the film, and contacting the second electrode to the solid electrolyte layer.

3,679,945
ELECTRIC QUANTITY MEMORY ELEMENT

Satoshi Sekido, Kyoto, and Tomohiko Arita, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 15, 1970, Ser. No. 72,486
Claims priority, application Japan, Sept. 20, 1969, 44/75564
Int. Cl. H01g 9/16; G11c 13/02
U.S. Cl. 317—231 9 Claims



An electric quantity memory element comprising a first electrode made of a metal electrochemically dissolved or deposited in accordance with Faraday's laws, a second electrode made of a valve metal and an aqueous solution containing a water soluble salt of the metal of the first electrode as an electrolyte.

3,679,946
STRIP MOUNTED SEMICONDUCTOR DEVICE

Robert E. Buck; Robert W. Metzger, Jr.; Albert D. Rittmann, and Eugene H. Sayers, all of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

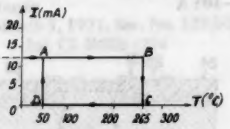
Division of Ser. No. 686,589, Nov. 29, 1967. This application July 6, 1970, Ser. No. 60,997
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 8 Claims

A semiconductor package assembly and method of making it. A semiconductive element is mounted on a flat strip. A portion of the strip is partially separated from, and raised above the plane of, the strip. The raised portion is eventually completely separated from the strip, and forms a terminal member for the semiconductive element. The element and connection to the terminal are enclosed, perferably in a plastic potting. Means are provided to increase the rigidity of the strip in the enclosure area. Means are also provided to enhance adhesion of a plastic potting to the strip and terminal members. A plurality of devices can be simultaneously or successively formed from a single strip. Multiple terminal devices can be formed using adjacent multiple raised portions on the strip.

3,679,947
METAL-INSULATOR SEMI-CONDUCTOR STRUCTURES WITH THERMALLY REVERSIBLE MEMORY

Benoy Kumar Chakraverty, Varces, and Alain Plenier, Grenoble, both of France, assignors to Agence Nationale De Valorisation De La Rechercke (Anvar), Paris, France

Filed Feb. 10, 1971, Ser. No. 114,154
Claims priority, application France, July 10, 1970, 7025759
Int. Cl. H01l 9/00
U.S. Cl. 317—234 R 6 Claims



A metal-insulator semiconductor structure for use in particular as a switching element with thermally reversible memory and comprising a semiconductor substrate, a film of amorphous insulator material on the said substrate and a metallic film which is deposited at least partially on the said insulator film, characterized in that the said amorphous insulator film exhibits a resistivity which is lower than the intrinsic resistivity of the said amorphous insulator material and which is comprised between 10^7 and $10^{11}\Omega$-cm at ambient temperature, the decrease in the said resistivity being due to the diffusion of ions into the said amorphous insulator film, the said structure being in a conducting or insulating stage within a predetermined temperature range, in an insulating state above the said range and in a conducting state below the said range.

3,679,948
VARIABLE CAPACITANCE DIODE

Wolfgang Wenzig, Munich-Solln, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 11, 1969, Ser. No. 884,348
Claims priority, application Germany, Dec. 17, 1968, P 18 15 158.1
Int. Cl. H01l 13/00
U.S. Cl. 317—234 R 3 Claims

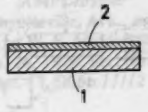
A semiconductor diode for use as voltage dependent capacitance with p^+n^+n or n^+p^+p structure. The concentration of the dopant that determines the conductance type of the middle n^+ or p^+ region decreases monotonously at least in one component region of said zone, as its distance from the p-n junction increases. The outer p^+ or n^+ region is so strongly doped that the space charge region of the p-n junction extends at least predominantly into the n^+n or p^+p region. The coating of the n^+n or p^+p regions is so adjusted that its concentration N(x), in dependence on the distance x from the p-n junction of the diode, meets everywhere the Equation $N(x) > -x/3\,dN/dx$.

3,679,949

SEMICONDUCTOR HAVING TIN OXIDE LAYER AND SUBSTRATE

Genzo Uekusa, Osaka; Shigeru Tanimura, Kyoto; Kazuhiro Higashi, Osaka, and Takao Sumoto, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Ukyo-ku, Kyoto, Japan

Filed Sept. 23, 1970, Ser. No. 74,561
Claims priority, application Japan, Sept. 24, 1969, 44/76483; Sept. 26, 1969, 44/77192
Int. Cl. H01l *3/00, 15/06*
U.S. Cl. 317—238 17 Claims



A semiconductor composite having a rectifying characteristic is provided by depositing a tin oxide film on a semiconductor substrate. In view of the fact that the tin oxide film has high transparency and conductivity the composite can be used as an excellent photoelectric device.

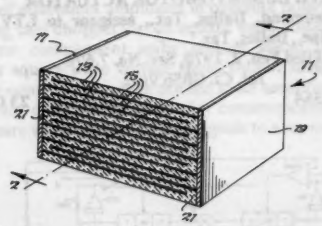
Preferably the tin oxide film is deposited on the substrate by reacting a halogenated organic tin compound with oxygen at an elevated temperature. Conductivity of the tin oxide film can be enhanced by incorporation of a small amount of antimony trichloride into the dimethyl tin dichloride. It was found that there are preferred reaction temperatures, time periods, and amount of mixed antimony trichloride for providing a composite having the desired characteristics. By depositing a plurality of separate tin oxide films on a single substrate by a photo-etching process of tin oxide film an integrated photoelectric apparatus is provided.

3,679,950

CERAMIC CAPACITORS

Truman C. Rutt, Niagara Falls, N.Y., assignor to N L Industries, Inc., New York, N.Y.

Filed April 16, 1971, Ser. No. 134,689
Int. Cl. H01g *1/01*
U.S. Cl. 317—258 12 Claims



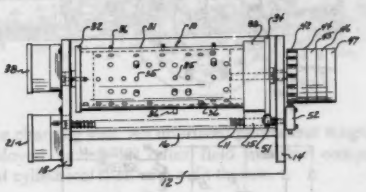
A sintered ceramic article which comprises internal electrodes and/or conductors is formed by producing a sintered ceramic body that has areas of ceramic with interconnected pores extending to an outer face thereof and providing a conductor in said porous areas. The ceramic body may be formed by depositing, as by screen printing, on sheets of a powdered dielectric or insulating ceramic material bonded with a temporary bond, an area of a temporarily bonded powdered ceramic material which on firing becomes porous, consolidating a plurality of such sheets, and sintering them. Subsequently a conductive material may be provided in the porous areas by impregnating said areas with a conductive material or with a material which is reacted or decomposed to form a conductive material in said areas.

3,679,951

ELECTRIC TIMING DEVICE

Robert A. Whitlock, Rockford, Ill., assignor to Aquamatic Inc., Rockford, Ill.

Filed Aug. 2, 1971, Ser. No. 168,329
Int. Cl. H01h *43/12*
U.S. Cl. 318—102 18 Claims



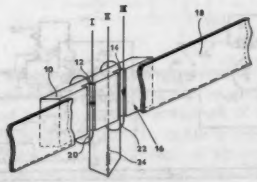
A drum and a rotary switch are driven by an electric motor which indexes them to various circumferential positions. A lead screw is mounted parallel to the drum and is driven by a reversible electric motor. A follower on the lead screw moves therealong until it engages a stop which is adjustably mounted on the drum, whereupon the reversible motor stalls and reverses its direction of rotation to return the follower to the point of beginning. A shoulder on the drum is engaged by the returning follower to again stall the motor and start the next cycle. The returning follower engages a switch to start the indexing of the drum. Thus a sequence of switching operations are timed and the duration of each is readily adjustable.

3,679,952

TWO SLOT LINEAR INDUCTION MOTOR

Yves Pelenc, La Tronche, France, assignor to Merlin Gerin Societe Anonyme, Grenoble, France

Filed Jan. 19, 1971, Ser. No. 107,749
Claims priority, application France, Feb. 25, 1970, 7006858
Int. Cl. H02k *41/02*
U.S. Cl. 318—135 4 Claims



Linear induction motor comprising a magnetic field structure bearing two spaced coils supplied with currents out of phase by an angle of $2\pi/3$ and dividing the air gap face into three equal pole faces to produce a balanced travelling magnetic field.

3,679,953

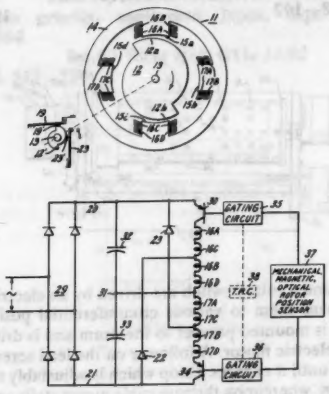
COMPATIBLE BRUSHLESS RELUCTANCE MOTORS AND CONTROLLED SWITCH CIRCUITS

Burnice D. Bedford, Scotia, N.Y., assignor to General Electric Company

Filed Nov. 6, 1970, Ser. No. 87,565
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 11 Claims

Brushless reluctance motors are compatible with energization by the simple rectilinear voltages easily produced by motor control circuits having a small number of mechanical or solid state switches. These motors with two or three opposing

pairs of main and feedback stator windings, and suitable variable or constant gap nonpolarized rotors, require a like number



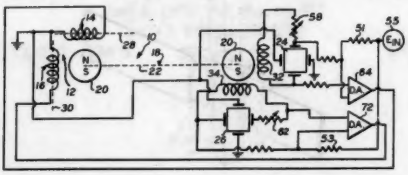
of controlled switches and uncontrolled rectifiers actuated by a rotor position sensor to generate square wave voltages on which the reluctance motors operate efficiently.

3,679,954

BRUSHLESS D.C. MOTOR WITH RATE CONTROL OF POSITION SENSOR

Geoffrey S. Hedrick, Katonah, N.Y., assignor to Lear Siegler, Inc., Armonk, N.Y.

Filed July 13, 1970, Ser. No. 54,387
Int. Cl. H02k *29/00*
U.S. Cl. 318—254 **28 Claims**



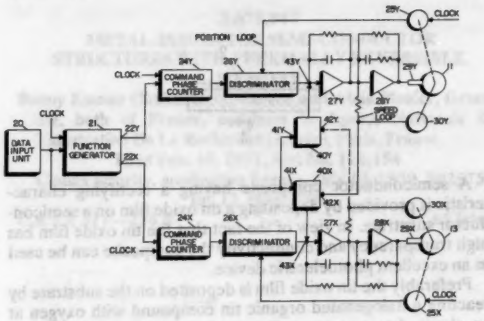
A direct rate feedback signal is provided for a magnetic flux sensor, such as a magneto-sensitive Hall effect sensor or a Magnistor, of a brushless D. C. motor by providing an independent feedback path for the sensor which path contains a stator winding which is independent from the motor excitation stator windings and which is positioned in magnetic coupled relation with the motor rotor. A differential amplifier is also provided which is associated with the Hall sensor for obtaining a differential Hall sensor voltage during rotation of the rotor which voltage is fed to the excitation windings in a separate path. Constant speed control for a brushless D. C. motor having a pair of angularly displaced magnetic flux sensors is provided by providing, in an independent feedback path for one sensor, a means having a center frequency, which means is responsive to a frequency deviation of a frequency associated with the angular velocity of the rotor from the center frequency, for providing a negative feedback signal, and a means for functionally operating on the feedback signal to produce a speed regulation signal which is supplied to both sensors.

3,679,955

CONTROL SYSTEM FOR COMPENSATING FOR DIMENSIONAL ERRORS DUE TO CUTTING TOOL WEAR IN AN AUTOMATIC MACHINE TOOL

John M. Rhoades, Waynesboro, Va., assignor to General Electric Company

Continuation-in-part of Ser. No. 876,692, Nov. 14, 1969. This application June 7, 1971, Ser. No. 150,775
Int. Cl. G05b *19/24*
U.S. Cl. 318—572 **22 Claims**



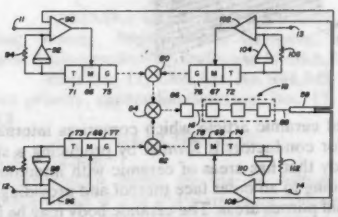
A control system including apparatus which compensates for wear of the cutting tool. In a contouring control wherein the programmed instantaneous velocity along the contour is represented by a vector V, first and second compensating arrangements measure the motion of the first and second axes drive motors and multiply output signals indicative thereof by a geometrical function of the angle between the programmed tangential path of the cutting tool and one of the axis and by a factor related to the magnitude of tool wear to produce compensation signals. The compensation signals are applied to motor control loops to cause the actual tangential path of the cutting tool to be offset by a distance vector C which is normal to the vector V and has a magnitude equal to that of cutting tool wear.

3,679,956

MULTIPLE SERVOMOTOR ACTUATOR

William G. Redmond, Dallas, Tex., assignor to LTV Electrosystems, Inc., Dallas, Tex.

Filed Feb. 2, 1970, Ser. No. 7,676
Int. Cl. G05b *9/02*
U.S. Cl. 318—564 **23 Claims**



Four servomotors are coupled together in a velocity summing arrangement to produce a single motion output. Two of the four servomotors are coupled together through a differential gear set that has a single rotary output. The second servomotor pair is also coupled together through a differential gear set that produces a single rotary output. These two rotary outputs of the differential gear sets are in turn coupled through a third gear set that also has a single rotary output.

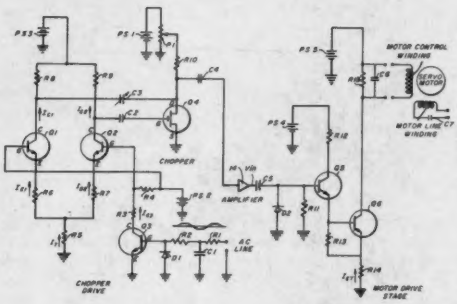
This rotary output may be converted into a linear motion by means of a rotary-to-linear motion transducer, or used as a rotary motion. Each of the four servomotors is controlled individually by a separate generated control signal in a system that includes a tachometer for generating velocity feedback signals and a linear variable differential transformer for generating position feedback signals.

3,679,957

CHOPPER CIRCUIT FOR USE IN AN A.C. SERVO AMPLIFIER

C. Anthony Farque, Fayetteville, Ark., assignor to Ray H. Wilburn, Tulsa, Okla. and W. E. Maldonado, Lansing, Mich.

Filed Feb. 26, 1970, Ser. No. 14,516
Int. Cl. G05b *11/12*
U.S. Cl. 318—684 **3 Claims**



This invention relates to a control circuit for driving a servomotor. More particularly, the invention relates to a circuit for controlling a servomotor including a chopper circuit providing a regularly reoccurring square wave signal of constant frequency and selectable voltage levels having a spike voltage signal superimposed thereon, a time complement spike signal generating circuit means providing spike voltage signals of equivalent amplitude in opposite polarity, means of summing said chopper circuit square wave voltage signal and said time complement spike voltage signal to provide a chopper square wave voltage signal output substantially free of spike components which are fed to an amplifier and thence to a motor drive circuit means for communicating the spike-free square wave control voltage signals to a servomotor.

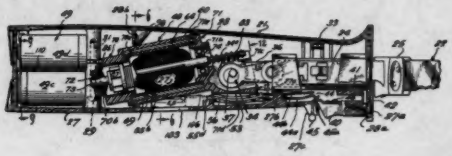
3,679,958

BATTERY POWERED ELECTRIC KNIFE AND CHARGER-STORAGE STAND THEREFOR

Worth L. Chambers, Lombard, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Division of Ser. No. 775,064, Nov. 12, 1968, Pat. No. 3,606,216, which is a division of Ser. No. 574,648, Aug. 24, 1966, Pat. No. 3,432,702. This application Sept. 10, 1970, Ser. No. 71,186
Int. Cl. H01m *45/04*
U.S. Cl. 320—2 **4 Claims**

A battery operated electric knife having an elongated housing defining the knife handle and enclosing an electric motor and battery unit. A pair of charging contacts are mounted entirely within the elongated housing with access openings thereto below the motor and a charging and storage stand are provided shaped to receive the knife handle in only one predetermined position whereby said housing for the electric knife may be resiliently clamped in assembled relationship



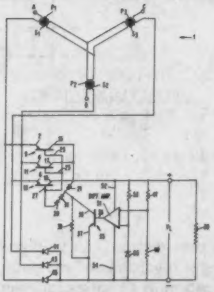
with the charging unit. An improved permanent magnet rotor is employed having an outer field member comprising a resilient cylindrical shell with a slit therein.

3,679,959

HIGH CURRENT LOW VOLTAGE REGULATED POWER SUPPLY

James P. Beesley, Kingston, and John B. Gunn, Mount Kisco, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,245
Int. Cl. H02m *7/12*
U.S. Cl. 321—47 **20 Claims**



A polyphase source of alternating current is converted to a low voltage high current regulated d.c. in a manner to conserve power and reduce costs by reduction of the number of components required therefor. To achieve this end, a single transistor is employed for each phase of the polyphase input transformer secondary winding configuration which transistor acts to perform the dual function of providing both rectification and regulation of the a.c. input.

ERRATUM

For Class 321—18 see:
Patent No. 3,679,962

3,679,960

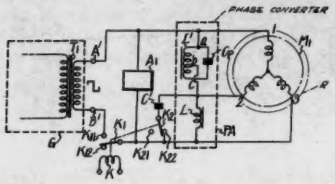
ELECTRIC POWER SOURCE SYSTEM FOR GYROSCOPIC INSTRUMENT

Yoichi Hirokawa, Kamakura, and Masatoshi Sato, Tokyo, both of Japan, assignors to Kabushikikaisha Tokyo Keiki (Tokyo Keiki Co., Ltd.), Tokyo, Japan

Filed Jan. 19, 1971, Ser. No. 107,669
Claims priority, application Japan, Jan. 23, 1970, 45/6193; Jan. 23, 1970, 45/6194; Jan. 23, 1970, 45/6195
Int. Cl. H02k *7/02*
U.S. Cl. 322—4 **1 Claim**

An electric power source system for a gyroscopic instru-

ment in which the kinetic energy of the gyro rotor revolving at high speed is used as an induction generator during times when the normal electrical power source for the gyroscopic



instrument fails and to maintain the gyroscopic instrument in its normal operative condition during the time the electrical power source is disconnected.

3,679,961

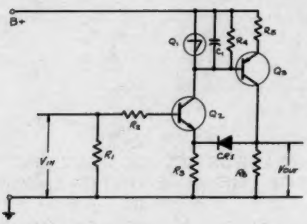
BUFFER AMPLIFIER AND VOLTAGE REGULATING CIRCUIT

David C. Hamilton, Midland Park, N.J., assignor to Ramsey Controls, Inc., Mahwah, N.J.

Filed July 7, 1971, Ser. No. 160,392

Int. Cl. G05f 3/08

U.S. Cl. 323—8 **8 Claims**



A circuit for providing a D.C. voltage output equal to the D.C. voltage input regardless of the output load while giving current amplification. An emitter follower circuit in conjunction with an output diode is utilized to regulate the output voltage. The circuit also protects against overload and short circuit conditions, as well as suppressing spurious oscillations.

3,679,962

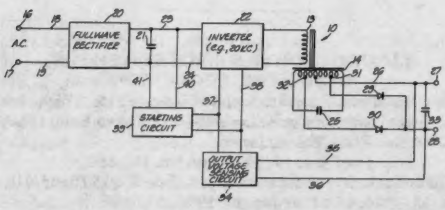
HIGH FREQUENCY PARAMETRIC VOLTAGE REGULATOR

Cravens L. Wanlass, Santa Ana, Calif., assignor to Ambac Industries, Incorporated

Continuation-in-part of Ser. No. 771,816, Oct. 30, 1968. This application Jan. 12, 1970, Ser. No. 871,477

Int. Cl. H02m 7/52; G05f

U.S. Cl. 321—18 **3 Claims**



A parametric regulator in which an inverter is positioned between the input source of power and a parametric device to provide the parametric device with a high frequency input. The output of the parametric device is rectified and monitored by a sensing circuit which controls the frequency of the inverter to maintain the output voltage constant. A sensing and control circuit is provided which permits the use of conventional transistors in the inverter by establishing a proper timing pattern for the triggering of these transistors into and out of conduction.

3,679,963

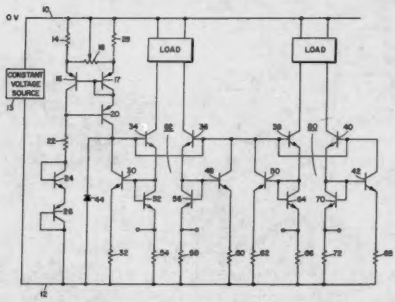
NEUTRON RADIATION AND GAMMA RAY HARDENED ADJUSTABLE POWER SUPPLY

Maurice G. Free, Tempe, and Leo L. Wisseman, Scottsdale, both of Ariz., assignors to MOOTORA, Inc., Franklin Park, Ill. and Motorola, Inc., Franklin Park, Ill.

Filed Jan. 30, 1970, Ser. No. 7,164

Int. Cl. G5f 1/58

U.S. Cl. 323—4 **6 Claims**



A current supply including matched transistors and diodes in which circulating paths are provided for the increased base currents due to decrease of beta of the transistors caused by neutron radiation and for the photoelectric currents produced in the transistors and diodes due to gamma ray radiation. The flow of current provided by the radiation and gamma hardened current source is adjustable.

3,679,964

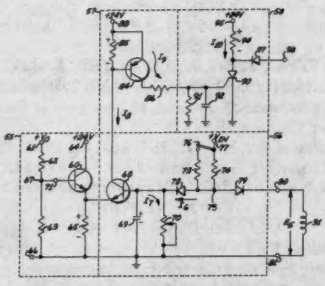
OVER-CURRENT DETECTOR

John R. Nowell, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Oct. 4, 1971, Ser. No. 186,122

Int. Cl. H02h 7/12; H02m 3/32

U.S. Cl. 323—9 **10 Claims**



An over-current detector monitors the current delivered by a switching regulator and provides a signal for disabling the

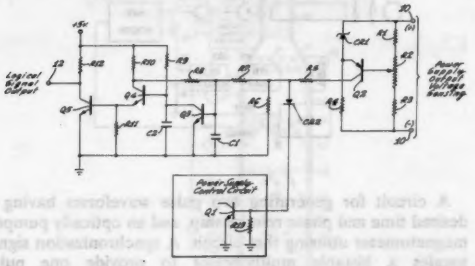
switching regulator when the current exceeds a threshold value. The threshold value is determined by the value of the output voltage from the switching regulator.

3,679,965

POWER SUPPLY VOLTAGE OUTPUT DETECTOR

Bruce L. Wilkinson, Torrance, Calif., assignor to Pioneer Magnetics, Inc., Santa Monica, Calif.

Filed Feb. 25, 1971, Ser. No. 118,656
Int. Cl. G05f 1/48; G08b 29/00
U.S. Cl. 323—19 **4 Claims**



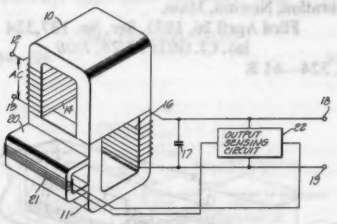
A circuit for use in conjunction with a power supply and which provides a first signal amplitude (e.g., logical "1") when the voltage output from the power supply is at or above its proper value, and which provides a second signal amplitude (e.g., logical "0") when the power supply voltage is below its proper value.

3,679,966

CLOSED LOOP PARAMETRIC VOLTAGE REGULATOR

Cravens L. Wanlass, Santa Ana, Calif., assignor to Ambac Industries, Incorporated

Filed July 31, 1968, Ser. No. 749,198
Int. Cl. G05f 1/32
U.S. Cl. 323—56 **3 Claims**



A parametric voltage regulator in which the inductance component of the resonant circuit of a parametric device is varied in response to changes in the output voltage, caused for example by changes in line frequency, to maintain the output voltage constant. The inductance is preferably changed by providing an external flux generator on the core of the parametric device to vary the reluctance of a part of the core, but can also be accomplished by the use of a separate inductor in the resonant circuit.

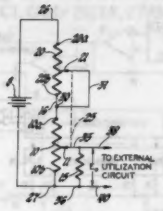
3,679,967

POTENTIOMETER-RESISTOR NETWORK FOR PRODUCING A NON-LINEAR DIRECT CURRENT POTENTIAL OUTPUT SIGNAL

William C. Staker, Springfield, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 21, 1970, Ser. No. 100,301
Int. Cl. H02p 13/00
U.S. Cl. 323—79 **1 Claim**

A potentiometer-resistor network for producing a non-linear direct current potential output signal in response to an applied constant direct current potential input signal. A source of constant direct current potential is connected across two series connected linear potentiometers, each having a movable contact mechanically interconnected with the other for ganged operation. The movable contact of one potentiometer is connected to the junction between the two potentiometers and a resistor is connected across the movable contact of the other potentiometer and the terminal end thereof opposite the junction between the series connected potentiometers. Upon the operation of the potentiometer movable contacts, a non-linear direct current output potential signal appears across output circuitry connected across the parallel combination of the resistor and that portion of the potentiometer between the movable contact and the terminal end thereof to which the resistor is connected.

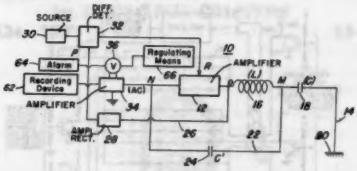


3,679,968

METHOD AND DEVICE FOR MEASURING THE THICKNESS OF A METAL DEPOSIT ON AN INSULATING SUPPORT

Jean Claude Commercon, 35 Chemin des Petites Brosses, 69 Caluire, and Guy Berthier, Avenue Posteur, 01 Saint Maurice de Beynost, both of France

Filed March 16, 1970, Ser. No. 19,933
Int. Cl. G01r 33/12
U.S. Cl. 324—34 TK **3 Claims**

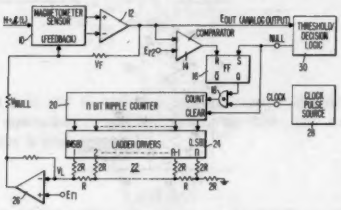


Plastic film is drawn from a spool and passes around a drum in a vacuum chamber in such a way that the film is exposed to metal vapor which is deposited thereon in thickness ranging from 50 angstroms to several microns. The metallized film then passes around guide rollers and is wound on a reel. One of the guide rollers comprises a novel hermetically sealed shell of electrical insulating material containing novel detectors which are responsive to the thickness of the metal coating on the film. Such detectors consist of coreless induction coils, each constituting the tuning element of a unique stabilized oscillating circuit, the voltage of which is a very accurate measure of the relative thickness of the metal coating on the film by virtue of the eddy currents induced therein.

3,679,969
MAGNETOMETER SENSOR DIGITAL AMBIENT NULLING SYSTEM

Richard L. Fussell, Chester Springs, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed June 1, 1971, Ser. No. 148,796
Int. Cl. G01r 33/02
U.S. Cl. 324—43 R 10 Claims

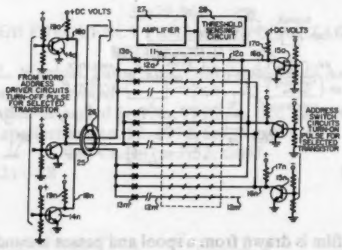


A system is described for use with a magnetometer sensor to provide automatic cancellation of comparatively large steady state ambient magnetic field effects in order to sense the very small magnitude, very low frequency signal information. The system which is effective at the emplacement and initial actuation of the sensor as well as upon the subsequent occurrence of a gross ambient field change, causes a nulling voltage, electrically controlled in predetermined increments, to eliminate the ambient field effects. The resultant magnetometer sensor output responds to input information with full sensitivity and without the direct passband constraints introduced by other ambient nulling techniques.

3,679,970
SELECTION MATRIX INCLUDING A DIODE TEST CIRCUIT

Hilary M. Winters, Forest Park, and James R. Creasy, Lombard, both of Ill., assignors to Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed April 22, 1970, Ser. No. 30,731
Int. Cl. G01r 31/02
U.S. Cl. 324—51 2 Claims

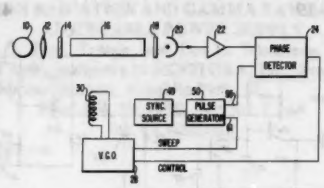

+DC VOLTS
AMPLIFIER
THRESHOLD SENSING CIRCUIT
-DC VOLTS
FROM BCD ADDRESS DRIVER CIRCUITS TURN-OFF PULSE FOR SELECTED TRANSISTOR
ADDRESS SWITCH CIRCUITS TURN-ON PULSE FOR SELECTED TRANSISTOR

A test circuit routinely tests buffer diodes of a selection matrix for shorts. Drive lines that are connected to operating conductors of the selection matrix pass through a toroidal magnetic core to induce into a output winding of the core a voltage proportional to change in current in a selected operating conductor. Switching circuits for applying current to selected conductors are arranged to reverse the polarity of voltage applied to the conductors so that when an operating conductor with a shorted diode is selected, approximately twice the normal current change is detected by the test circuit.

3,679,971
DIGITAL WAVEFORM GENERATOR WITH ADJUSTABLE TIME SHIFT AND AUTOMATIC PHASE CONTROL

Marshall B. Broome, Tulsa, Okla., and William W. Burress, Dallas, Tex., assignors to Atlantic Richfield Company

Division of Ser. No. 874,206, Nov. 5, 1969, Pat. No. 3,619,793. This application June 3, 1971, Ser. No. 149,510
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 R 8 Claims

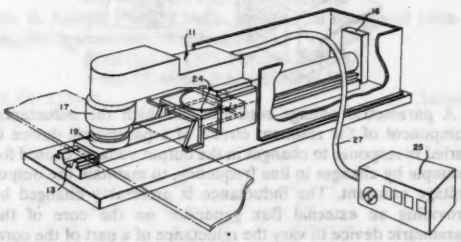


A circuit for generating two pulse waveforms having a desired time and phase relationship, and an optically pumped magnetometer utilizing that circuit. A synchronization signal toggles a bistable multivibrator to provide one pulse waveform. The synchronization signal also triggers a monostable multivibrator, the output of which toggles a second bistable multivibrator to provide the second pulse waveform. The time the monostable multivibrator remains in its unstable state determines the desired time relationship between the two waveforms. Should the waveforms assume the wrong phase relationship, gating circuitry returns them to the proper phase relationship. The circuit can be utilized to provide a phase reference signal and a sweep control signal in an optically pumped magnetometer, giving the desired time and phase relationship between those two signals.

3,679,972
MICROMETER THICKNESS GAGE

Louis Michelson, Belmont, Mass., assignor to Lion Precision Corporation, Newton, Mass.

Filed April 26, 1971, Ser. No. 137,324
Int. Cl. G01r 27/26, 7/00
U.S. Cl. 324—61 R 5 Claims

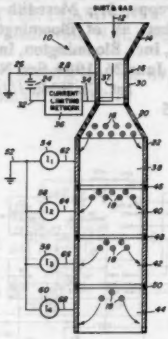


A gage for measuring the deviation in thickness of sheet material by measuring the sum of the capacitances between a top electrode and the upper surface of the sheet and a lower electrode and the bottom surface of the sheet. The gage is calibrated with a precise calibration sheet of known thickness, by adjusting the vertical position of the upper electrode to produce a null output on a capacitance bridge. For measuring, the upper electrode, adjustably mounted on a precise micrometer screw, is then adjusted by a distance precisely equal to the difference between the calibration sheet thickness and the target thickness of the material to be measured.

3,679,973
ELECTROGASDYNAMIC DUST MONITOR

Nelson S. Smith, Jr., and George E. Fasching, both of Morgantown, W. Va., assignors to The United States of America as represented by the Secretary of the Interior

Filed Oct. 20, 1970, Ser. No. 82,288
Int. Cl. G01n 27/00
U.S. Cl. 324—71 R 9 Claims

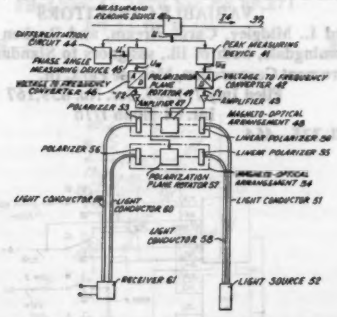


Size and flow rate of dust particles entrained in a flowing gas stream are measured by an electrogasdynamic dust monitor. A multiple segment collector section generates currents with interdependent values related to dust properties.

3,679,974
DEVICE FOR MEASURING CURRENTS IN A HIGH VOLTAGE CONDUCTOR INCLUDING A CONTROLLED OPTICAL ARRANGEMENT

Klaus Mollenbeck, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed July 24, 1970, Ser. No. 58,032
Claims priority, application Germany, Aug. 1, 1969, P 19 39 912.3
Int. Cl. G01n 31/00
U.S. Cl. 324—96 15 Claims

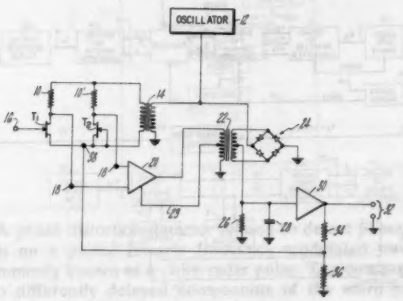


A control unit derives a control magnitude from a current to be measured in a high voltage conductor. A controlled optical arrangement utilizes the control magnitude for converting a light beam into light pulses having an information content corresponding to the current to be measured. A light beam is directed into the controlled optical arrangement. A receiver converts the light pulses to output signals corresponding to the current to be measured. The controlled optical arrangement comprises an electro-optical or a magneto-optical device including a double refractor or a polarization plane rotator for transverse double refracting and rotating of the plane of polarization of the light beam. A polarizer polarizes the light beam after rotation of the plane of polarization thereof.

3,679,975
RESISTIVE MODULATOR

Harry Fein, 832 Quarter Mile Rd., Orange, Conn.

Filed Aug. 6, 1970, Ser. No. 61,545
Int. Cl. G01r 19/18, 17/06
U.S. Cl. 324—118 3 Claims



Circuitry for sensing applied potentials, the circuitry presenting a high impedance to the source of the potentials to be sensed, is disclosed. The invention employs a matched pair of field effect transistors which are operated in accordance with a resistive modulation technique. In the disclosed embodiment the transistors are connected in opposite legs of a balanced bridge circuit and are excited by alternating the current, input signals applied to the gate of one of the transistors producing a small change in the resistance of that transistor.

3,679,976
ELAPSED TIME INDICATOR HAVING COLOR INDICATION

Juro Ogawa, and Fujimoto Yoshiaki, both of Tokyo, Japan, assignors to Japan Radio Company, Limited, Tokyo, Japan

Filed March 23, 1971, Ser. No. 127,193
Claims priority, application Japan, March 31, 1970, 45/27557; Nov. 9, 1970, 45/98543
Int. Cl. G04f 9/00; G01r 11/44
U.S. Cl. 324—182 13 Claims

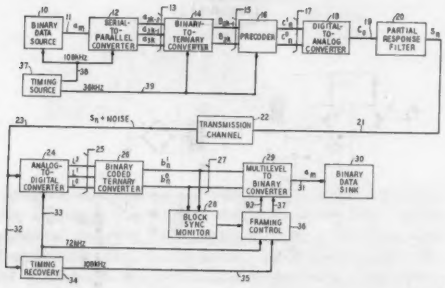
The anode electrode of an elapsed time indicator includes an elapsed time measuring metallic element superposed on a coloring metallic element, the normal electrode potential of the coloring element being higher than that of the elapsed time measuring element, and lower than the electrolyzing potential of the electrolytic solution, so that electrolysis of the elapsed time measuring element precedes that of the coloring

element. The electrolytic solution contains a substance which reacts with the coloring element on electrolysis thereof to change the color of the electrolytic solution, thereby indicating the elapsed time.

3,679,977
PRECODED TERNARY DATA TRANSMISSION

Robert D. Howson, River Plaza, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 24, 1969, Ser. No. 835,984
Int. Cl. H04b 1/62, 1/66
U.S. Cl. 325—42 7 Claims

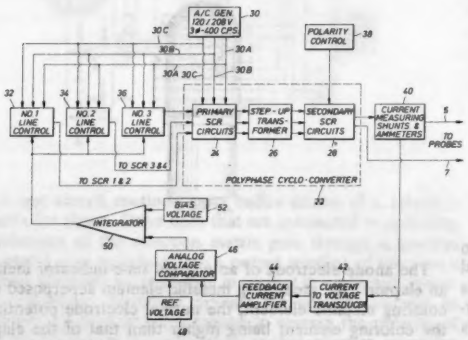


A digital data transmission rate of three bits per cycle of bandwidth is achieved in precoded partial-response band-limited communication channels by partitioning binary digits into groups of three two-level digits and translating these binary groups of three into pairs of three-level digits prior to transmission. Correct pairwise association of received signals is accomplished by reserving a three-level digit pair of monitoring purposes. This reserved pair can validly occur only at a transition between allowable pairs. By monitoring the presence of the reserved pair, correct pairwise association of ternary digits is assured and binary digits are properly decoded without having to provide a special framing signal.

3,679,978
INDUCED POLARIZATION SYSTEM AND METHOD FOR GEOLOGICAL INVESTIGATION HAVING A STABLE WAVEFORM

George H. Hopkins, Jr., P.O. Box 5546, Austin, Tex.

Filed Jan. 19, 1970, Ser. No. 3,642
Int. Cl. H04b 1/04
U.S. Cl. 325—187 23 Claims

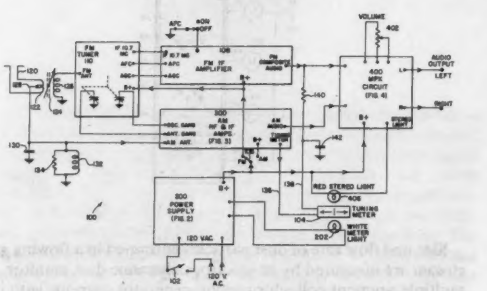


An induced polarization transmitter circuit is provided with a polyphase cycloconverter for rendering the transmitter output signal independent of both the load on the transmitter circuit and the AC power supply which energizes the transmitter circuit. Novel analog and digital feedback circuitry is provided for monitoring and controlling the amplitude and waveform of the transmitter output signal.

3,679,979
AM, FM, AND FM STEREO TUNER HAVING SIMPLIFIED AM TO FM SWITCHING MEANS

James Edgar Krepps, Jr.; Meredith K. Chamberlain, and Robert D. Fisher, all of Bloomington, Ind., assignors to Sarkes Tarzian, Inc., Bloomington, Ind.

Filed June 26, 1969, Ser. No. 836,754
Int. Cl. H04b 1/16
U.S. Cl. 325—315 6 Claims

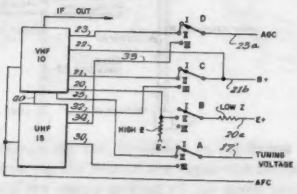


A tuner can be switched between AM, FM, and stereo modes of reception without any radio or audio-frequency band-switching, and without any changes being made in the tuning meter connections. Separate AM and FM radio sections have power terminals which are alternately connected to a source of power by a single pole, double throw AM or FM selector switch. The audio outputs of the two radio sections are fed into a mixing amplifier, and the mixing amplifier output is fed to stereo demodulation circuitry. A single tuning meter is connected between the FM section audio output and the AM section automatic gain control.

3,679,980
SOLID STATE TELEVISION TUNER WITH VOLTAGE VARIABLE CAPACITORS

Edward L. Midgley, Carol Stream, and Reuben C. Carlson, Bloomingdale, both of Ill., assignors to Standard Kollsman Instrument Corporation, Melrose Park, Ill.

Filed July 7, 1969, Ser. No. 839,167
Int. Cl. H04b 1/16
U.S. Cl. 325—464 2 Claims



A solid state television tuner is disclosed herein. Actuation of a channel selector mechanism to one of a plurality of channel selection settings connects a distinctive level of voltage to a wide band signal selecting circuit. The signal selecting circuit includes a resonant circuit having solid state voltage variable capacitance that is selectively controllable in accordance

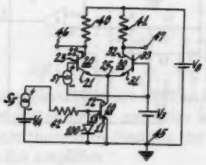
with the level of applied voltage. A different voltage level is connected for each of the channel selection settings and each is independently controllable through actuation of preset tuning mechanism only when connected for effecting fine tuning of the channel.

3,679,981

SYNCHRONOUS DEMODULATOR EMPLOYING COMMON BASE TRANSISTOR AMPLIFIER INPUT AND BASE-EMITTER CLAMPING ACTION

Allen Le Roy Limberg, Somerville, N.J., assignor to RCA Corporation

Filed Nov. 13, 1970, Ser. No. 89,272
Int. Cl. H03d 3/18
U.S. Cl. 329—50 6 Claims



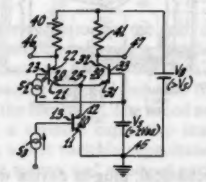
Input signals are coupled in common to the emitter electrodes of a pair of transistors arranged in a differential amplifier configuration, and are synchronously detected by switching signals coupled to the respective transistor base electrodes. The coupling to the emitter electrodes is through an amplifier transistor similar to that disclosed in U.S. Pat. No. 3,531,730, but exhibiting characteristics analagous to a common-base amplifier "folded around" ground potential as herein described.

3,679,982

SYNCHRONOUS DEMODULATOR EMPLOYING TRANSISTOR BASE-EMITTER CLAMPING ACTION

Allen LeRoy Limberg, Somerville, N.J., assignor to RCA Corporation

Filed Nov. 13, 1970, Ser. No. 89,271
Int. Cl. H03d 3/18
U.S. Cl. 329—50 8 Claims



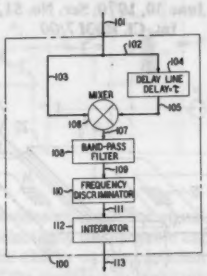
Input voltage signals are coupled in common to the emitter electrodes of a pair of transistors arranged in a differential amplifier configuration, and are synchronously detected by switching voltage signals coupled to the respective transistor base electrodes. The coupling to the emitter electrodes is through an amplifier transistor having a base electrode to which current signals to be demodulated are applied, a collector electrode connected to the common electrodes of the differential pair, and an emitter electrode connected to a point of reference or ground potential.

3,679,983

PHASE DISTORTION DETECTOR FOR DETECTING PHASE DISTORTION ON A LINEARLY FREQUENCY MODULATED WAVEFORM

Eugene Joseph Theriot, Greensboro, N.C., assignor to Bell Telephone Laboratories, Murray Hill, Berkeley Heights, N.J.

Filed Jan. 18, 1971, Ser. No. 107,002
Int. Cl. H03d 3/04
U.S. Cl. 329—110 5 Claims



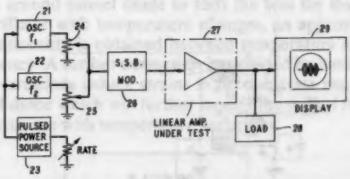
A phase distortion detector is used to detect phase distortion on a pulsed linearly frequency modulated waveform, commonly known as a chirp radar pulse. The detector mixes two differently delayed components of the chirp pulse to produce a constant difference frequency component, from which the phase modulation envelope is recovered to generate an error signal proportional to the phase distortion on the chirp pulse. The detector is utilized with a phase modulator in a feedback arrangement to compensate a chirp pulse dynamically for undesirable phase distortion. The detector is also used in another combination with a phase modulator and an amplitude equalizer to compensate a chirp pulse dynamically for both undesirable amplitude distortion and phase distortion.

3,679,984

PULSED TWO-TONE TEST SIGNAL GENERATOR FOR LINEAR AMPLIFIERS

Robert George Buus, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 19, 1970, Ser. No. 81,755
Int. Cl. H03f 19/00
U.S. Cl. 330—2 4 Claims



The response of a linear amplifier may be evaluated by applying a two-tone test signal, composed of the modulation product of equal amplitude sinusoids at frequencies f_1 and f_2, to an amplifier and observing the waveform of the output signal on an oscilloscope, or the like. The peak factor of the test signal may be increased by simultaneously pulsing both sinusoidal signals.

According to the invention, a stable envelope pattern with a high peak factor is obtained by developing each of two sinusoidal signals with a pulsed oscillator which employs an operational amplifier in a twin-tee configuration. Feedback in

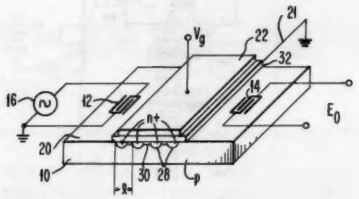
each oscillator is controlled at the threshold between oscillation and high Q bandpass operation. A simple half-wave rectifier arrangement is used to pulse the oscillators.

3,679,985

ACOUSTIC WAVE PARAMETRIC AMPLIFIER/CONVERTER

Frank F. Fang, Yorktown Heights, and Eric G. Lean, Mahopac, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,287
Int. Cl. H03f 7/00
U.S. Cl. 330—4.6 **11 Claims**



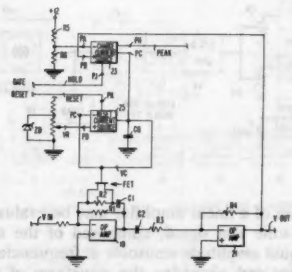
A parametric device for acoustic waves which does not depend on the non-linearities of a medium for operation. Both degenerate and non-degenerate parametric amplifier/converters are provided in which first order velocity changes give parametric interactions. The electric field associated with an acoustic wave in a piezolectric medium is modulated by an electric pump wave. This is accomplished by modulating the conductivity of a region in the piezoelectric medium, or close to that medium. The resulting modulation of the K-vector of the acoustic wave leads to parametric interactions between the acoustic signal wave, the electric pump wave, and the generated idler wave. Various effects, such as the field effect and the photoconductive effect, are used to modulate the conductivity of the region.

3,679,986

NON-LINEAR FEEDBACK GAIN CONTROL AND PEAK DETECTOR SYSTEM

Louis F. Zaman, III, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,645
Int. Cl. H03g 3/30
U.S. Cl. 330—86 **6 Claims**



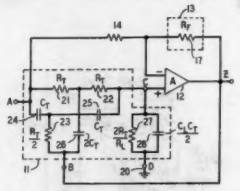
A non-linear feedback gain control and peak detector system in which the output of an amplifier is compared with a reference voltage, and the error or difference therebetween is stored in a hold circuit which in turn controls the gain of the amplifier. Peak detection is accomplished by providing an output from the feedback control circuit, which provides a signal when the first voltage peak reaches its maximum value.

3,679,987

ACTIVE RC WAVE TRANSMISSION NETWORK USING SINGLE AMPLIFIER TO ACHIEVE ALL-PASS TRANSFER FUNCTION

George Samson Moschytz, Highland Park, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 24, 1970, Ser. No. 92,399
Int. Cl. H03f 1/36
U.S. Cl. 330—107 **3 Claims**



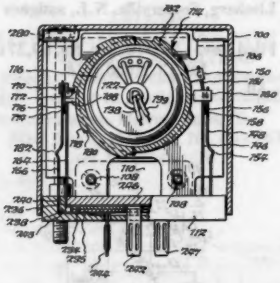
A resistance-capacitance network in circuit with a single operational amplifier provides an all-pass 360° phase transfer function. The single amplifier is arranged for operation in the differential mode with the signal to be controlled applied directly to the inverting input and through an amplitude shaping network to the noninverting input. Depending on whether the shaping network is loaded with a parallel or series resistance-capacitance combination parasitic phase shift or signal loss in the amplifier can also be compensated.

3,679,988

CAM ACTUATED SWITCH ASSEMBLY

Arthur W. Haydon, Middlebury, Conn., assignor to Tri-Tech, Inc., Waterbury, Conn.

Filed Nov. 10, 1970, Ser. No. 88,299
Int. Cl. H01h 7/16
U.S. Cl. 307—133 **12 Claims**



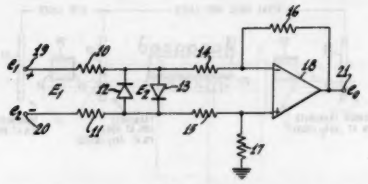
An electro-mechanical, plug-in device with a rotating cam which operates contact equipped, paired leaf-springs to provide specific open and closed electrical circuits in prescribed cyclic patterns. The cam is rotated by an AC synchronous motor mounted within the cam. The cam has lobes on its surface representative of a plurality of timing sequences. The leaf-springs are cantilever mounted in spaced-apart pairs in a plug base. In some embodiments the AC synchronous motor is operated directly from a sixty cycles per second external source while in another embodiment a solid-state non-polarized DC to AC inverter is mounted on the plug base of the device to convert power from an external D.C. source into alternating current to operate the cam motor.

3,679,989

CLAMP CIRCUIT FOR PREVENTING SATURATION OF OPERATIONAL AMPLIFIER

Gregg Joseph Thibodeau, Dracut, Mass., assignor to RCA Corporation

Filed Nov. 16, 1970, Ser. No. 89,573
Int. Cl. H03f 1/00, 3/00
U.S. Cl. 330—185 5 Claims



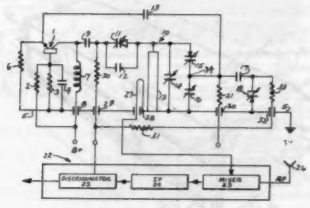
An input clamping circuit for use with an operational amplifier to prevent saturation of the amplifier and to prevent excessive input signals thereto by limiting the differential input voltage applied to the amplifier.

3,679,990

VARIABLE FREQUENCY OSCILLATOR WITH SUBSTANTIALLY LINEAR AFC OVER TUNING RANGE

David R. Hiday, Ludlow, and Ralph L. Mull, Jr., Fairview, both of Mass., assignors to General Instrument Corporation, Newark, N.J.

Filed Jan. 27, 1971, Ser. No. 110,093
Int. Cl. H03b 3/04, 5/12
U.S. Cl. 331—36 C 16 Claims



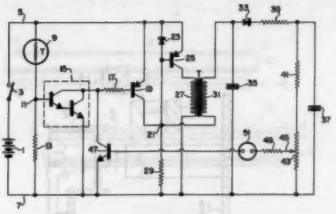
A tuned transistor oscillator for use with an RF receiver includes a transistor amplifier having a tuned network coupled between the collector and base of the transistor. Feedback is provided by a capacitor coupled between the tuned network and the emitter of the transistor. The tuned network includes a transmission line, a variable capacitive reactance means in parallel therewith, a first variable capacitance diode in series with said reactance means, and a second variable capacitance diode serially connected to said line. The capacitance of said reactance means is varied to allow the oscillator to sweep the desired frequency range, and the first and second capacitance diodes are varied by a DC AFC (automatic frequency control) voltage provided by the discriminator of the RF receiver to prevent oscillator drift. Said first and second diode capacitances are arranged so that the first capacitance has its greatest effect at the lower end of the oscillator frequency range while the second capacitor has its greatest effect at the upper end of said range, thereby providing an AFC signal which varies the oscillator frequency by a substantially constant amount independently of the oscillator frequency.

3,679,991

RAPID RECYCLE OSCILLATOR WITH CUTOFF AND THERMAL PROTECTION

Dennis J. Wilwerding, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed April 15, 1971, Ser. No. 134,219
Int. Cl. H01h 7/20; H05b 41/40
U.S. Cl. 331—62 5 Claims



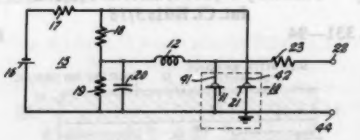
An oscillator provides an oscillation signal which is rectified and applied to a selectively dischargable capacitor. A control circuit monitors the charge on the capacitor and controls the cyclic operation of the oscillator to maintain the charge on the capacitor within predetermined limits, giving a visual signal indicative thereof. Temperature compensation means are included to terminate the operation of the oscillator while the temperature of the oscillator exceeds a predetermined value.

3,679,992

TUNNEL DIODE OSCILLATOR FM TEMPERATURE SENSOR

Alexander J. Yerman, Scotia, N.Y., assignor to General Electric Company

Continuation-in-part of Ser. No. 883,787, Dec. 10, 1969, abandoned. This application June 1, 1971, Ser. No. 149,011
Int. Cl. G01k 7/00; H03b 7/08
U.S. Cl. 331—66 4 Claims



In a tunnel diode oscillator used as a temperature sensor including a second tunnel diode to shift the bias for the tunnel diode oscillator with temperature changes, an approximately linear relationship is obtained between temperature and output frequency. A further correction is provided by having temperature variations induce strains in the substrate material of the tunnel diode which will further modify the output frequency in accordance with temperature variations.

3,679,993

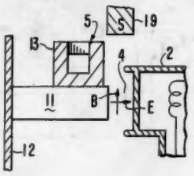
CROSSED-FIELD NOISE GENERATOR TUBE EMPLOYING A HIGH MAGNETIC FIELD INTENSITY

John E. Hentschel, East Brunswick, N.J., assignor to Varian Associates, Palo Alto, Calif.

Filed Sept. 27, 1967, Ser. No. 671,055
Int. Cl. H03b 29/00
U.S. Cl. 331—78 6 Claims

A crossed-field noise generator tube having substantially improved efficiency is disclosed. The noise generator tube includes a cylindrical cathode emitter surrounded by a slow-wave circuit to define an annular crossed-field interaction region therebetween. The slow-wave circuit is a fundamental

forward wave circuit provided with a circuit sever to define an upstream end and a downstream output end for the circuit. A resistive termination is provided at the upstream end of the circuit and an output terminal is provided at the downstream end of the circuit for extracting r.f. noise output. A magnetic circuit is provided for producing an axially directed magnetic field in the crossed-field interaction region between the anode and cathode. The intensity of the axial magnetic field produced in the interaction region is greater than ten times the



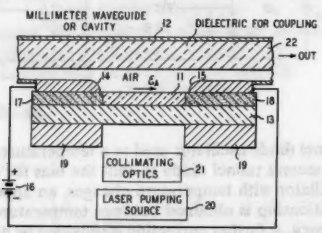
cut-off magnetic field intensity for crossed-field interaction region. Use of this exceptionally high axial magnetic field intensity produces an unexpected substantial enhancement in the efficiency of the noise generator. It is believed that this improved efficiency is due to a resultant decrease in the thickness of the rotating hub of space charge in the crossed-field interaction region, thereby yielding a more efficient noise transfer mechanism for transfer of noise energy from the turbulent electron flow in the space charge to the synchronous waves on the slow-wave circuit.

3,679,994

BROADBAND OPTICALLY PUMPED SEMICONDUCTIVE LASERS

Van-Tran Nguyen, and Jagdeep Chandravadan Shah, both of Matawan, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 20, 1971, Ser. No. 145,182
Int. Cl. H01s *3/18*
U.S. Cl. 331—94 **8 Claims**



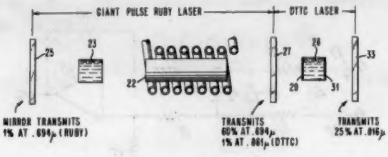
The disclosed optically pumped masers and lasers employ multiple valley semiconductive devices for amplification and oscillation in the millimeter or submillimeter frequency range. This operation results from the population inversion of carriers within continuum states of the conduction band. Electronic charge carriers are excited to the conduction band from impurity levels of from the valence band by one-photon or two-photon optical pumping. The energy of excited carriers is selected to be just below the intervalley energy gap. A small electric field is able to create a transfer of charge carriers between the two valleys in order to obtain the carrier population peak near the intervalley energy level. The combination of the optical pumping and the appropriate small electric field avoids Gunn instabilities. A moderate magnetic field increases available gain at the expense of oscillation bandwidth by providing discrete energy levels below the intervalley energy gap.

3,679,995

OPTICALLY PUMPED LIQUID LASERS

Peter P. Sorokin, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 532,182, March 7, 1966, abandoned. This application March 11, 1970, Ser. No. 18,001
Int. Cl. H01s *3/20*
U.S. Cl. 331—94.5 **24 Claims**



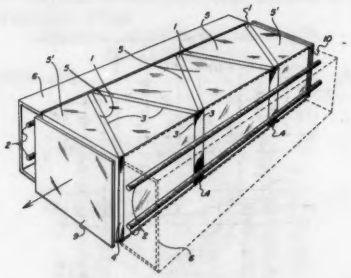
An optically pumped organic laser using materials having allowed electric dipole fluorescent transitions. These materials include photosensitizing dyes. The active fluorescent materials are pumped with either a laser pulse or a flashlamp pulse, the pumping pulse having a risetime not exceeding a few times the decay time between the first excited singlet state and a triplet state of the fluorescent material.

3,679,996

FACE-PUMPED LASER DEVICE WITH LATERALLY POSITIONED PUMPING MEANS

Joseph C. Almasi, and William S. Martin, both of Schenectady, N.Y., assignors to General Electric Company

Continuation-in-part of Ser. No. 755,654, Aug. 27, 1968, abandoned. This application Aug. 3, 1970, Ser. No. 60,741
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **30 Claims**



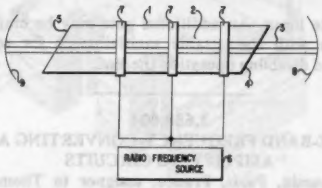
In one embodiment, a plurality of planar laser elements comprising the active laser medium are assembled into a zigzag pattern with refracting prisms forming interfaces with the major surfaces of the laser elements. A source of radiation of pumping wavelengths is positioned close to and uniformly illuminates the adjacent surfaces of the refracting prisms, the incident radiation of pumping wavelengths being refracted and reflected through the prism medium and being uniformly incident on the major surfaces of the planar laser elements, causing uniform activation therein. The coherent radiation emitted by the active laser medium radiates along an axis which extends through the interfaces but not through the uniformly illuminated surfaces adjacent the source of pumping radiation. Thus, the pumping means is laterally positioned with respect to the coherent laser beam axis. A fluid coolant having an index of refraction approximately the same as that of the laser medium or significantly different therefrom, may be utilized, flowing between the major surfaces of the laser elements and surfaces of the refracting prisms.

3,679,997

NOBLE GAS-MOLECULAR NITROGEN LASER

Wolfgang Friedl, Neckargemund, and Volker Schafer, Bruchkobel near Hanau, both of Germany, assignors to Original Hanau Quarzlampen GmbH, Hanau, Germany

Continuation-in-part of Ser. No. 477,286, Aug. 4, 1965, abandoned. This application Oct. 21, 1970, Ser. No. 57,769
Claims priority, application Germany, Aug. 4, 1972, Q 792
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 12 Claims



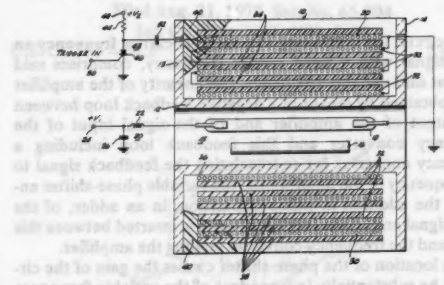
Optical transmitter or amplifier apparatus having as its operating medium a gas mixture including a noble gas and up to about one mole per cent of molecular nitrogen, said mixture being maintained at pressures such that the range of partial pressures of the noble gas is about 10 to 500 Torr.

3,679,998

LASER FLASHTUBE TRIGGERING ARRANGEMENT

Rodney J. Dahlinger, Canoga Park, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 21, 1971, Ser. No. 108,487
Int. Cl. H01s 3/09; H01f 39/00
U.S. Cl. 331—94.5 7 Claims



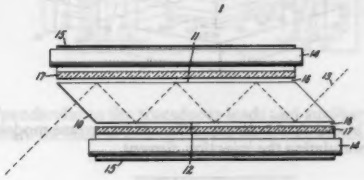
The trigger transformer for the disclosed laser excitation arrangement includes a spool-like ceramic core having a pair of radially outwardly extending annular end wall portions and defining an elongated laser cavity along its axis. A primary winding and a plurality of secondary windings are coaxially wound about the core at different radial locations, with the secondary windings disposed radially inwardly of the primary winding and with an electrical conductor interconnecting the longitudinally opposite ends of each pair of successive secondary windings. A layer of plastic is disposed between each secondary winding and the adjacent interconnecting conductor and between the outermost secondary winding and the primary winding, while epoxy resin potting surrounds the primary and secondary windings and the interconnecting conductors. A laser rod and a flashtube are mounted parallel to one another within the laser cavity. Electrical excitation circuitry includes an RC pulse-forming network coupled to the flashtube and a triggering network including a silicon controlled rectifier coupled to the transformer primary winding.

3,679,999

LASER COOLING METHOD AND APPARATUS

Joseph P. Chernoch, Scotia, N.Y., assignor to General Electric Company

Filed June 12, 1970, Ser. No. 45,691
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 4 Claims



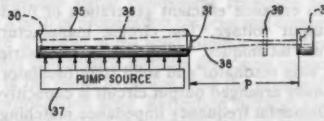
A new laser cooling method is disclosed in which materials in different physical states are laminated about the laser body. Specifically, thin gas layer is used as a heat conductor in thermal contact with the laser body. In contact with the gas layer is a high thermal conductivity solid which is also optically transparent at the pump wavelength. This material, in turn, has its opposite face or edges, or both, in contact with a liquid coolant. Thus, there is provided a cooling method in which gaseous and solid state materials act as heat conductors for liquid cooling the laser apparatus.

3,680,000

LASER ARRANGEMENT INCLUDING A CAVITY DEFINED BY CONVEX AND CONCAVE MIRRORS

Ronald Benjamin Chesler, Summit, and Dan Maydan, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 19, 1971, Ser. No. 126,133
Int. Cl. H01s 3/08
U.S. Cl. 331—94.5 5 Claims



A laser cavity defined by convex and concave mirrors and including a discrete intracavity lens is characterized by a relatively large TEM_{oo} spot radius, a short physical length and good stability.

3,680,001

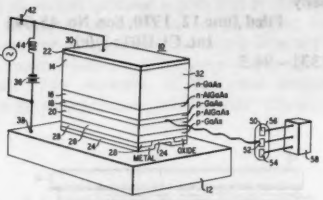
DYNAMIC AM CONTROL OF THE TRANSVERSE MODES OF A SELF-PULSING SEMICONDUCTOR LASER

Thomas Lee Paoli, Catham, and Jose Ellis Ripper, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 13, 1971, Ser. No. 142,982
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 14 Claims

A semiconductor laser, at appropriate values of current above threshold, enters a nonlinear regime characterized by (1) a continuous region in which the output radiation self-pulses simultaneously in two competing transverse modes and/or (2) a bistable region in which the output radiation self-pulses

in either of two noncompeting transverse modes, but not both. In one embodiment the laser is current biased in one of these



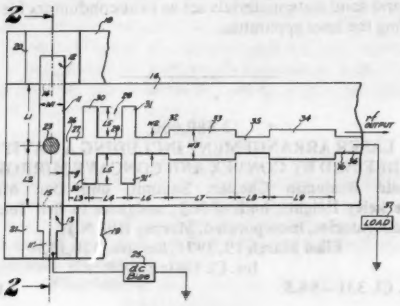
regions and is switched between different transverse modes by amplitude modulating the injection current.

3,680,002

MICROSTRIP MICROWAVE OSCILLATORS

John P. Quine, Schenectady, N.Y., assignor to General Electric Company

Filed Oct. 19, 1970, Ser. No. 81,767
Int. Cl. H03b 7/14
U.S. Cl. 331—96 **14 Claims**



A microwave oscillator in microstrip form is single-tuned simultaneously at both fundamental and second harmonic frequencies to enhance efficient generation of fundamental frequency output voltage. The circuit, manufacturable by printed circuit techniques, comprises a microstrip cavity formed by a strip resonator and solid state oscillator device. The orthogonally arranged output circuit is capacitively coupled for fundamental frequency impedance matching and includes a coupling line terminated by an open-ended-line filter network which passes fundamental frequency energy while reflecting second harmonic energy. An application is LSA-mode operation of transferred-electron diodes.

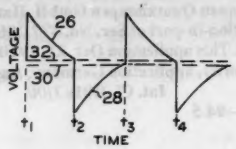
3,680,003

MULTIVIBRATOR CIRCUITS EMPLOYING OR-NOR GATES

Maurice Mark Walker, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 27, 1970, Ser. No. 14,922
Int. Cl. H03k 3/282
U.S. Cl. 331—108 D **13 Claims**

An astable or a monostable multivibrator includes a single stage, integrated circuit, "or-nor" gate, and timing circuitry intercoupling one or more gate outputs with the gate input. In the case of a monostable multivibrator, a timing capacitor couples the "or" output to the gate input, and a current source provides capacitor charging current to the timing capacitor. In the instance of the astable multivibrator, a timing capacitor also couples the gate's "or" output to the gate input, while a charging resistor is disposed between the gate's "nor" output



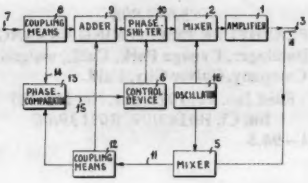
and the gate input. An additional gate may be employed in conjunction with the astable multivibrator for selectively enabling and disabling operation thereof.

3,680,004

WIDE-BAND FREQUENCY-CONVERTING AND AMPLIFYING CIRCUITS

Antoine Poussin, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Oct. 19, 1970, Ser. No. 81,722
Claims priority, application France, Oct. 24, 1969, 6936502
Int. Cl. H03c 3/08
U.S. Cl. 332—19 **2 Claims**



In a circuit for translating to a variable carrier frequency an input signal with a fixed carrier frequency, comprises said signal at said variable frequency, the linearity of the amplifier being obtained by means of a negative feedback loop between the output of the amplifier and of the signal input of the frequency converter and this feedback loop including a frequency converter for re-translating the feedback signal to the frequency of the input signal, the variable phase-shifter ensuring the addition in phase opposition, in an adder, of the input signal and of the feedback signal is inserted between this adder and the frequency converter feeding the amplifier.

This location of the phase-shifter causes the gain of the circuit to be substantially independent of the variable frequency which is used. In addition the phase-shifter is automatically controlled.

3,680,005

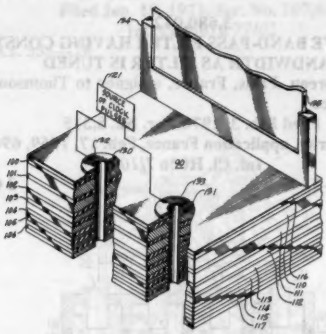
INTEGRAL ELECTRICAL POWER DISTRIBUTION NETWORK HAVING STACKED PLURAL CIRCUIT PLANES OF DIFFERING CHARACTERISTIC IMPEDANCE WITH INTERMEDIATE GROUND PLANE FOR SEPARATING CIRCUIT PLANES

Arnold J. Jorgensen, Duarte; Lawrence L. Bewley, Cupertino, and Kenneth H. White, Newport Beach, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 537,049, March 24, 1966, Pat. No. 3,519,959. This application Dec. 15, 1969, Ser. No. 885,117The portion of the term of this patent subsequent to July 7, 1987, has been disclaimed.
Int. Cl. H01p 3/02, 3/18; H05k 1/04
U.S. Cl. 333—6 **10 Claims**

A plurality of conductive sheets are stacked in spaced relationship. A plurality of dielectric sheets are stacked in the

spaces between the conductive sheets to form with the conductive sheets an integral structure. A source of bias voltage is coupled to a first pair of the conductive sheets, a source of



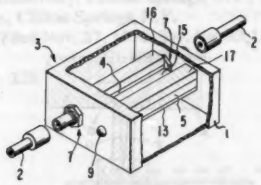
clock pulses is coupled to a second pair of the conductive sheets having a larger characteristic impedance than the first pair, and a source of logic levels is coupled to a third pair of the conductive sheets having a larger characteristic impedance than the second pair. The sources are coupled to their respective pairs of conductive sheets such that alternate conductive sheets are grounded. The terminal pins of circuit board connectors are selectively connected to the conductive sheets.

3,680,006

MICROWAVE ISOLATOR

Robert L. Addington, Cupertino, and Gerald J. Latus, Jr., Los Gatos, both of Calif., assignors to Addington Laboratories, Inc., Santa Clara, Calif.

Filed Aug. 21, 1970, Ser. No. 65,804
Int. Cl. H01p *1/32, 3/02, 3/08*
U.S. Cl. 333—24.2 **2 Claims**



A microwave isolator is described having first and second conductive members positioned parallel to one another and spaced apart by a ferrimagnetic member positioned therebetween with all elements positioned on a dielectric plate. An unbalanced twin transmission line isolator and a balanced three line isolator are described.

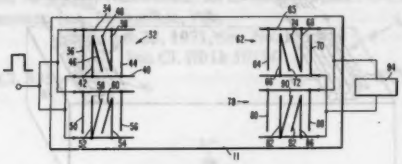
3,680,007

SURFACE WAVE TRANSDUCER FOR DIGITAL SIGNALS

Samuel Chin-Chong Tseng, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 30, 1970, Ser. No. 76,942
Int. Cl. H03h *7/30*
U.S. Cl. 333—30 R **8 Claims**

Surface wave transducers of the interdigital type for generating and detecting return to zero pulse sequences of surface waves are disclosed. The transducer, which is located on the surface of a suitable surface wave medium, is an interdigitated electrode array including main electrodes that are



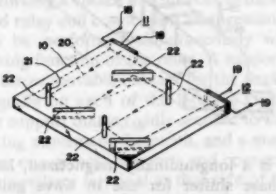
perpendicular to the transducer leads and auxiliary electrodes that are inclined at an angle to the main electrodes.

3,680,008

ULTRASONIC WAVE DELAY DEVICE HAVING A TRAP ZONE FOR UNDESIRED SIGNAL COMPONENTS

Toshiaki Yamamoto, Tokyo, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Dec. 4, 1970, Ser. No. 95,018
Claims priority, application Japan, Dec. 6, 1969, 44/98087
Int. Cl. H03h *7/30, 9/30*
U.S. Cl. 333—30 R **3 Claims**



An ultrasonic wave delay device for delaying an ultrasonic wave signal a predetermined time by propagating the ultrasonic wave signal through a solid propagation medium, in which principal signal component reflection surfaces constituting a path of propagation for principal components of the signal are arranged in the solid component propagation zone in the solid propagation medium and cause unnecessary components of the signal to escape from the principal signal component propagation zone. Reflection surfaces exclusively for the unnecessary signal components may be provided adjacent the principal signal component propagation zone in the solid propagation medium, whereby the unnecessary signal components can be subjected to multiple reflection between the unnecessary signal component reflection surfaces and outer walls of the solid propagation medium to ensure that the unnecessary signal components become extinct.

3,680,009

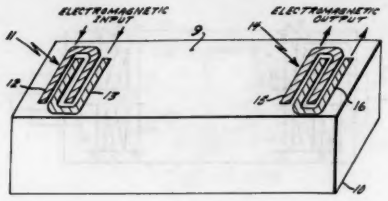
ACOUSTIC SURFACE WAVE DELAY LINE

Andrew J. Slobodnik, Jr., Lowell, Mass., assignor to The United States of America as represented by the Secretary of the Air Force

Filed March 18, 1971, Ser. No. 125,572
Int. Cl. H03h *7/30*
U.S. Cl. 333—30 **3 Claims**

An acoustic surface wave delay line having a lithium niobate substrate member the surface wave propagation plane

of which is parallel to the lithium niobate crystalline X axis and intersects the crystalline Z and −Y axes. Optimum results



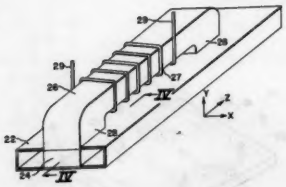
are obtained when the intersecting angle of the propagation plane and the Z axis is in the vicinity of 48.5°.

3,680,010

FERRITE WAVEGUIDE PHASE SHIFTER EXHIBITING NEGATIVE PHASE SHIFT

Daniel C. Buck, Hanover, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 3, 1969, Ser. No. 813,073
Int. Cl. H01p 1/18
U.S. Cl. 333—31 A **9 Claims**



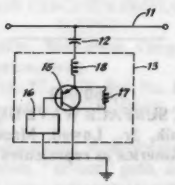
Described is a longitudinally magnetized, latching ferrite reciprocal phase shifter for use in wave guides having a thickness which causes the wave energy to experience a negative phase shift in passing through the ferrite, and wherein the ferrite material itself fills only the center portion of the wave guide and is longitudinally magnetized by means of coil means surrounding one or more U-shaped magnetically permeable members external to the wave guide but forming with the ferrite within the wave guide a toroid-type magnetic circuit.

3,680,011

LOSS CANCELLING RESONATOR AND FILTERS

David K. Adams, Portola Valley, and Raymond Y.-C. Ho, Sunnyvale, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Aug. 3, 1970, Ser. No. 60,381
Int. Cl. H03h 7/10, 11/00
U.S. Cl. 333—70 R **13 Claims**



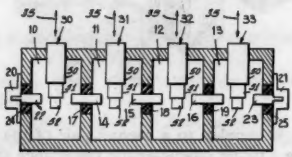
A loss cancelling resonator is disclosed which comprises a passive LC circuit coupled to a transistor in the inverted-common-collector configuration. Typical notch filter configurations are also disclosed including notch filters with more than one resonator. Switchable notch filters are disclosed as well as a frequency synthesizer which utilizes a plurality of switchable notch filters.

3,680,012

MICROWAVE BAND-PASS FILTER HAVING CONSTANT BANDWIDTH AS FILTER IS TUNED

Jean-Noël Moreau, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 3, 1970, Ser. No. 8,315
Claims priority, application France, Feb. 17, 1969, 6903852
Int. Cl. H03b 7/10
U.S. Cl. 333—73 W **3 Claims**



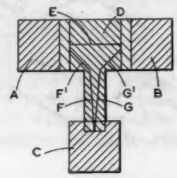
In a filter comprising a plurality of cavities coupled to each other by means of metal probes, the cavities have respective tuning rods which extend therein and whose cross-sectional area is not constant throughout the whole of their length, so that the filter bandwidth is made fairly constant within a large range of tuning frequencies.

3,680,013

FILM ATTENUATOR

Walter Arnold Pye, Morpeth, Northumberland, England, assignor to Welwyn Electric Limited, Northumberland, England

Filed Feb. 16, 1971, Ser. No. 115,244
Claims priority, application Great Britain, Feb. 27, 1970, 9,720/70
Int. Cl. H01p 1/22
U.S. Cl. 333—81 R **8 Claims**



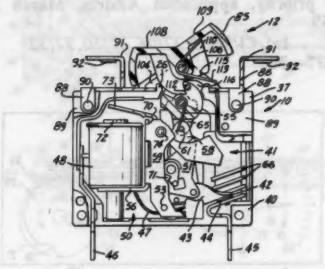
An electrical film attenuator or other film resistor network comprising an insulating substrate having adherently mounted thereon a single film resistive element, said element being provided with at least three terminals in electrical contact therewith and, on said element and in electrical contact therewith, an electrically conductive layer dividing up said element into three distinct portions two of which will have the same electrical resistance value after removal of part of said element at a locus midway between two of said terminals, one of which being an input and the other an output terminal, the third portion of said electrical resistive element being shaped so as to enable its electrical resistance value to be adjusted by removing part of it, each of said first two portions being in electrical contact with only one of said two terminals, the third portion being electrically connected to the remaining terminal or terminals.

3,680,014

CIRCUIT BREAKER WITH AN IMPROVED ACTUATING MECHANISM

John C. Wilkinson, Lawrenceville, N.J., assignor to Heinemann Electric Company, Trenton, N.J.

Filed Jan. 19, 1971, Ser. No. 107,618
Int. Cl. H01h 77/02
U.S. Cl. 335—26 15 Claims



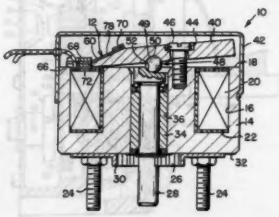
A circuit breaker having an automatically resettable linkage mechanism which includes a pivotal link for moving the circuit breaker contacts between the open and closed positions. The circuit breaker also includes a manual actuating mechanism which engages the pivotal link and is operable to manually move the contacts to the "closed" position but is inoperable to subsequently manually move the contacts to the "open" position and which is itself reset by the reset movement of the pivotal link after the collapse of the linkage mechanism in response to the occurrence of a preselected electrical condition.

3,680,015

IMPROVED HINGE MEANS FOR A ROTARY SOLENOID ARMATURE

Raymond J. Ganowsky, Clifton Springs, N.Y., assignor to Cliftronics, Inc., Clifton Springs, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,157
Int. Cl. H01f 7/08
U.S. Cl. 335—228 12 Claims



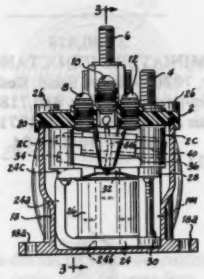
In a rotary solenoid having a hinged armature and converter means between the armature and a rotary shaft for transmitting arcuate pivotal movement of the armature into rotary movement of the shaft, the improvement wherein the hinge is a flexible hinge, preferably a one-piece thin metal strip, connected at one side thereof to the armature and at the other side thereof to a solenoid casing.

3,680,016

AUXILIARY SWITCH FOR AN ELECTROMAGNETIC RELAY

Albert H. Becker; Joseph M. Hart, both of Milwaukee, and John A. Quaal, Wauwatosa, all of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed June 23, 1971, Ser. No. 155,853
Int. Cl. H01h 50/54
U.S. Cl. 335—106 8 Claims



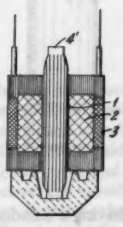
One or two auxiliary switches are built into an electromagnetic relay. At each side of the relay, up to three auxiliary terminal inserts are molded in the relay base, each having a screw connector on the outside, and on the inside of the relay housing either a stationary contact, a wire (solder) connector, or both, thus affording a choice of a number of different auxiliary switching and relay coil connection arrangements as auxiliary functions to be performed simultaneously with the main power switching function of the relay. A support for a single-pole double-throw movable contact for the auxiliary switch is molded integrally on each of the left and right ends of the relay contact support that is rigidly secured to the relay armature for rocking movement therewith, and a movable contact is mounted on one or both supports and connected by a wire to the center auxiliary terminal at that side of the base. This provides an auxiliary switch structure having low contact bounce, more overtravel, direct drive, increased reliability and stability under vibration, and economy.

3,680,017

IGNITION COIL FOR INTERNAL COMBUSTION ENGINE

Yoshimichi Shiari, and Toshimi Komori, both of Kariya, Japan, assignors to Nippon Denso Kabushiki Kaisha, Kariya-shi, Japan

Continuation-in-part of Ser. No. 33,157, May 5, 1970, abandoned, which is a continuation of Ser. No. 726,712, May 6, 1968, abandoned. This application March 23, 1971, Ser. No. 127,173
Claims priority, application Japan, May 15, 1967, 42/30773
Int. Cl. H01f 27/24
U.S. Cl. 336—213 5 Claims



An ignition coil for an internal combustion engine comprises a spirally wound sheet of silicon steel. The sheet of silicon steel has a series of slits extending in substantially parallel

relation transversely thereof and closely adjacent each other, the slits terminating short of the opposite side edges of the sheet. The spirally wound silicon sheet is inserted into a dielectric winding cylinder or form for the primary and secondary windings of the ignition coil, and the wound sheet bulges intermediate its axially opposite ends to closely engage the winding core. The sheet tends to unwind to some extent, and this leaves an axially extending opening at the center of the wound core, this axially extending opening having a diameter not more than one-half the internal diameter of the winding core.

3,680,018

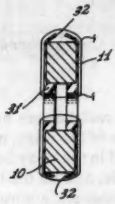
MINIATURE INDUCTANCES

Martin Elberger, 7020 Bothwell Road, Reseda, Calif.

Continuation-in-part of Ser. No. 810,718, March 26, 1969, abandoned. This application Feb. 3, 1971, Ser. No. 112,252

Int. Cl. H01f *17/04*

U.S. Cl. 336—221 **3 Claims**



Improved insulation for inductances, such as ring-shaped miniature transformers, is disclosed. An inductance is provided with a pair of similar axial end caps made of insulating material and interposed between core and winding.

3,680,019

HIGH-VOLTAGE FUSE HAVING A PLURALITY OF FUSE LINKS WOUND HELICALLY AROUND AN INSULATING MANDREL

Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed June 8, 1970, Ser. No. 44,135

Int. Cl. H01h *85/08, 85/10, 85/12*

U.S. Cl. 337—161 **3 Claims**

A high-voltage fuse having a mandrel supporting a plurality of ribbon fuse links wound substantially helically around the mandrel. Each fuse link has relatively short serially related neck portions, and each fuse link has a relatively long neck portion. The relatively long neck portions of the various fuse links are displaced in a direction longitudinally of the mandrel to substantially equalize heat generation by said neck portions along the mandrel.

3,680,020

FOR THE THERMOSTATIC REGULATION OF ROOM TEMPERATURES

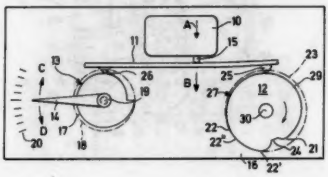
Hans Berger, Schonaich, Germany, assignor to Zentra Albert Burkle Kommanditgesellschaft, Schonaich, Germany

Filed March 31, 1970, Ser. No. 24,176

Claims priority, application Austria, March 31, 1969, 4A3178/69

Int. Cl. H01h *37/04, 37/20, 37/52*

U.S. Cl. 337—305 **14 Claims**



In an apparatus for the control of temperature, a continuously rotating contour disc causes a bimetallic element to execute a slow oscillating motion for alternately turning on and off a switch operatively connected to a heat generating device. The complemental lengths of one off- and one on-period which together constitute a cycle of constant duration, depend upon an arbitrary positioning of the bimetallic element (setting of the desired temperature value) and upon the temperature-responsive deformation (actual temperature value) of the bimetallic element.

3,680,021

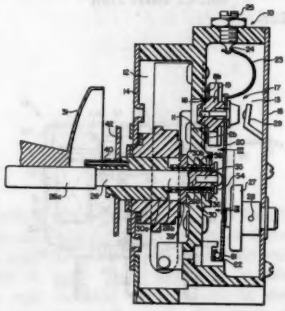
OVEN THERMOSTAT FOR HEAT CLEANING OVEN

Calvin J. Holtkamp, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1970, Ser. No. 103,097

Int. Cl. H01h *37/12*

U.S. Cl. 337—312 **9 Claims**



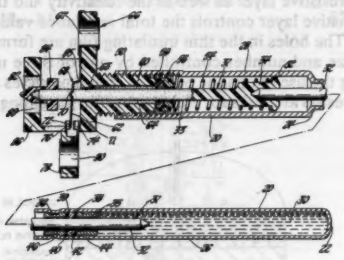
An oven thermostat for a heat cleaning oven is provided in which a concentric shaft arrangement controls positioning of a movable member which establishes the temperature at which cycling of the switch contacts of the thermostat will take place to correspondingly cycle heating means in the oven, the inner shaft of the arrangement being used to establish the temperature in the cooking temperature range and the outer shaft being used to set the heat cleaning temperature.

3,680,022

HYDRAULIC THERMOSTAT

James A. Bright, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 14, 1971, Ser. No. 106,443
Int. Cl. G01k 5/32; G05d 23/12; H01h 37/36
U.S. Cl. 337—315 3 Claims



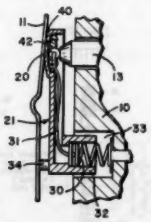
In the preferred form, a closed tube is provided with fixed shoulders on the opposite sides of a ring-shaped elastic seal member and a washer surrounding and having close fit with a rod extending into a viscous silicone thermal expansion fluid. At the open end of the tube the rod has a shoulder adapted on the inward movement to engage a double throw switch to move it from engagement with an outer contact into engagement with an inner contact. The rod is urged inwardly by a coil spring having its inner end pressing against a spring retainer fixed to the rod and having its outer end pressing against a second seal ring surrounding the rod for preventing leakage into an outer part of the tube.

3,680,023

THERMOSTAT USING THE HEAT ANTICIPATION HEATER AS A PART OF THE MECHANICAL CONNECTION BETWEEN THE TEMPERATURE RESPONSIVE ELEMENT AND SWITCH OPERATING MEMBER

Murrell F. Kautz, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 1, 1971, Ser. No. 148,362
Int. Cl. H01h 37/14, 37/52
U.S. Cl. 337—377 8 Claims



A thermostat having a temperature responsive means for providing a mechanical output force to operate a switch wherein a heater means, for providing heat to a thermostat for heat anticipation, provides the mechanical connection between the temperature responsive means and the switch whereby the thermal connection between the heater means and the temperature responsive means remains the same throughout the operation of the thermostat.

3,680,024

LIGHT RESPONSIVE AND MEASURING DEVICE

Kenichi Tashiro, and Hirokazu Tanaka, both of Tokyo-to, Japan, assignors to Stanley Denki Kabushiki Kaisha, Tokyo-to, Japan

Division of Ser. No. 376,477, June 19, 1964, Pat. No. 3,521,962. This application Feb. 27, 1970, Ser. No. 18,399
Int. Cl. H01c 7/08
U.S. Cl. 338—17 8 Claims

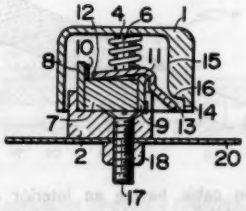
A photosensitive device includes an insulator base on which are located inner, outer and intermediate space electrodes which delineate concentric circular or noncircular areas which are occupied by a photoconductive material engaging opposing edges of the electrodes along their lengths. One or more of the electrodes may be open across their lengths, the openings being occupied by photoconductive material connecting adjacent areas. One or more of the electrodes may be provided with spaced parallel legs interdigitated by legs of another of the electrode.

3,680,025

CONTACTLESS PUSH BUTTON SWITCH

Tsunekazu Kobayashi, Kawasaki, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan

Filed Sept. 18, 1970, Ser. No. 73,391
Claims priority, application Japan, Sept. 19, 1970, 45/88864; Sept. 19, 1970, 45/88865
Int. Cl. H01c 7/16
U.S. Cl. 338—32 8 Claims

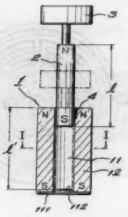


A contactless push button switch comprising a magnetic circuit including a magnet, stationary yokes, a movable yoke and a field-sensitive element (such as reluctance effect element, hole effect element, SMD, etc.), said magnetic circuit being disposed between a button cover and a base of the switch. By depressing the button cover the movable yoke is caused to undergo a physical change, thereby extremely reducing the density of the magnetic flux penetrating the field-sensitive element to cause a change of the terminal voltage or electro-motive force across the field-sensitive element so as to bring about the switching action of the switch.

3,680,026
CONTACTLESS SWITCHING APPARATUS

Noboru Masuda, Kawaguchi, and Masashi Kuroyanagi, Tokyo, both of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed May 24, 1971, Ser. No. 146,151
Int. Cl. H01c 7/16
U.S. Cl. 338—32 H 17 Claims

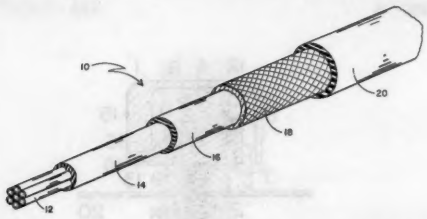


A contactless switching apparatus wherein a magnetic-containing casing with poles located at both ends and a central space extending along the length of the casing is provided. A bar magnet is positioned in the space of the casing so that the bar magnet can be slidably moved within the casing. A galvano-magnetro effect device is provided at at least one of the poles of the casing or on the bar magnet; the device being positioned in the central space and either fixed at the internal surface of the polar portion of the casing, or being capable of alignment with said internal surface. The switching apparatus is designed so that the device functions when the polar portion of the bar magnet, the polarity of which is opposite to the polarity of the magnet of casing, is opposed to the polar portion of the casing.

3,680,027
IGNITION CABLE

Joseph Michael Vitale, Cranston, R.I., assignor to Avnet, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 121,859, March 8, 1971, abandoned. This application April 19, 1971, Ser. No. 135,044
Int. Cl. H01c 3/00
U.S. Cl. 338—214 18 Claims



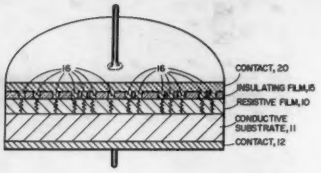
An ignition cable having an interior conductive core directly and tightly engaged by surrounding insulation, the engaged layers of the core and insulation being of material that are relatively nonadherent.

3,680,028
VERTICAL RESISTOR

James R. Black, Phoenix, and Harold S. Gurev, Paradise Valley, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed April 2, 1971, Ser. No. 130,610
Int. Cl. H01c 7/00
U.S. Cl. 338—308 9 Claims

There is disclosed a high valued vertical resistor whose high value is a result of contacting the resistive film through pinholes in an insulating film on top of the resistive film. The value is controlled by the areal density of pinholes through the thin overlaying insulating film such that the higher the areal density the lower the resistance value for the particular resistor. The resistor is completed by providing a metal layer over the pinholed film such that the metal extends through the pinholes to the resistive layer making contact thereto at a multiplicity of points. The number and size of the contacts made to the resistive layer as well as the resistivity and thickness of the resistive layer controls the total resistance value of the resistor. The holes in the thin insulating film are formed and the hole size and number controlled by one of three methods involving the use of opaque particles, metal particles and porous photoresists as masks for etching the thin insulating film.



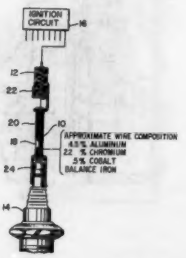
In one embodiment metallization fills the pinholes in the thin insulating layer so as to provide a multiplicity of contacts to the resistive layer which are spaced and insulated one from another. The structure in this case can be used as a sensing device for determining a planar contact area of an electrically conducting structure contiguous to the top surface of the resistor, the contact area varying in an inverse manner with the resistance of the resistor. The structure fabricated without continuous overlaying metallization can also be used as a sensing device for sensing the contact area of a resilient structure having a conductive film on the outside thereof.

The greatest utility of the vertical resistor thus formed is in electrical circuits in which a high but accurate resistive value for the resistor must be obtained. The resistance value of the resistor is provided by altering the areal density of the pinholes in the thin insulating film.

3,680,029
IGNITION CIRCUIT RADIATION SUPPRESSION RESISTOR

Norman H. Berry, 49 Cambridge, Pleasant Ridge, Mich.

Filed Dec. 16, 1970, Ser. No. 98,604
Int. Cl. H01c 1/06
U.S. Cl. 338—334 9 Claims



A wire resistor including a ceramic core and a resistor wire wrapped on the core constructed of approximately 4.5 percent aluminum, 22 percent chromium, 0.5 percent cobalt and the balance iron, which is coated with an insulating material, is positioned between an internal combustion engine ignition circuit spark plug lead and the associated spark plug for suppressing electromagnetic radiation on firing of the spark plug

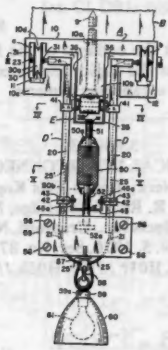
in the frequency range of 20–1,000 megahertz to prevent pollution of the air by extraneous radiation.

3,680,030

ELECTRICAL OUTLET TROLLEY

Ernest E. Johnson, 25 Rose St., Brookville, Pa.

Filed March 30, 1971, Ser. No. 129,475
Int. Cl. H01r *41/00*
U.S. Cl. 339—2 R 17 Claims



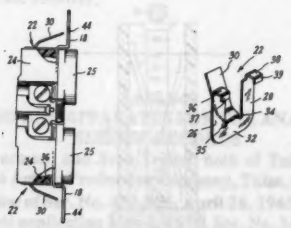
An overhead electrical outlet is suspended from a trolley frame structure that is provided with opposite pairs of side-mounted, closely coupled trolley wheels. A fixedly mounting head or box carries a pair of conductor bars of opposite electrical polarity that serve as guide tracks and electric current supplying rails for opposite pairs of trolley wheels. The frame structure has means cooperating with centrally disposed guide rollers and the head or box to regulate or adjust engagement pressure force applied by the trolley wheels to the associated current supplying rails. The construction enables the outlet to be easily moved longitudinally in line or in a circular or curved path from one position to another.

3,680,031

GROUNDING DEVICE FOR MOUNTING STRAP

Walter C. Schumacher, Warwick, R.I., assignor to General Electric Company

Filed April 30, 1971, Ser. No. 138,986
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R 1 Claim



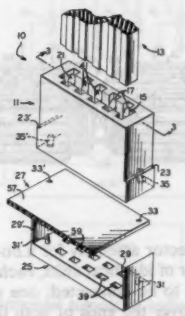
Grounding connection between the mounting strap of a wiring device and the metal housing in which the device is mounted by the strap is achieved by means of a spring clip designed for use with the mounting strap to ensure continuity of electrical connection between the strap and metal housing.

3,680,032

PRINTED CIRCUIT BOARD CONNECTOR ASSEMBLY

John L. Mosier, Kane, and Richard J. Peterson, Warren, both of Pa., assignors to Sylvania Electric Products, Inc.

Filed Jan. 7, 1971, Ser. No. 104,640
Int. Cl. H01r *11/32*; H05k *1/02*
U.S. Cl. 339—17 F 8 Claims



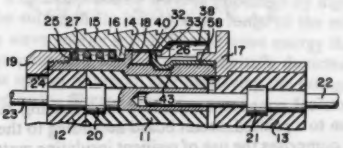
A printed circuit board connector assembly utilizing an insulating body having a plurality of pliable metallic contacts established therein. Each of these contacts has an upper elongated portion for contacting the side of a printed circuit board, a central portion for retaining the contact within the insulating body, and a lower wedge-shaped portion which extends from beneath the insulating body and penetrates the insulating material of a flat cable and contacts an electrically conducting wire located therein. This connection is accomplished when the insulating body is forced against a corresponding cover member, compressing the flat cable between.

3,680,033

COUPLING DEVICE FOR AN ELECTRIC CONNECTOR

Mitsuru Kawai, Matsudo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan

Filed April 15, 1971, Ser. No. 134,264
Claims priority, application Japan, May 14, 1970, 45/47170
Int. Cl. H01r *13/62*
U.S. Cl. 339—46 4 Claims

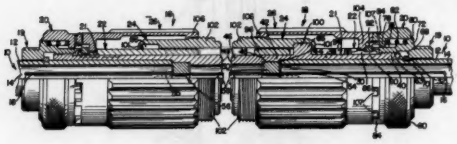


An electric connector employs a coupling device comprising a connecting ring having head portions and provided in a receptacle part, and a tubular body, an outer tube surrounding the tubular body and a spring located between the tubular body and the outer tube, said tubular body, outer tube and spring being provided in a plug part. When the receptacle part is fitted to the plug part, the outer tube is longitudinally retracted against the spring by the head portions of the connecting ring. Then, when the head portions of the connecting ring fall into outer recesses provided in the tubular body, the outer tube returns to its original position to keep the head portions of the connecting ring fitted into the outer recesses, thereby the receptacle part is kept coupled to the plug part. The outer tube can be longitudinally retracted to release the coupling of the receptacle part with the plug part.

3,680,034
CONNECTOR - UNIVERSAL

Weichien Chow, Park Forest, and Jerry Provinsky, Downers Grove, both of Ill., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed July 17, 1969, Ser. No. 842,450
Int. Cl. H01r 25/00
U.S. Cl. 339—48 20 Claims

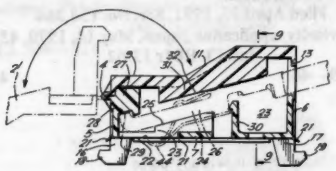


A universal connector assembly for a co-axial cable, or air line, including a pair of identical units, each mounted one one of the line sections to be connected, one of them having an inner sleeve fitted over the ends of both line sections at the juncture when the units are connected, and an outer coupling ring connectable to a fixed element in the other unit; also center contact means for connecting the center conductor, including a button on each, and each button including radially flexible fingers penetrable into its own center conductor and self-biased into engagement with the other button.

3,680,035
PCB HINGED POD CONNECTOR

Wladimiro Teagno, and Franco Trevisiol, both of Turin, Italy, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 16, 1971, Ser. No. 115,512
Claims priority, application Italy, Feb. 25, 1970, 210 A/79
Int. Cl. H01r 13/48
U.S. Cl. 339—59 M 10 Claims



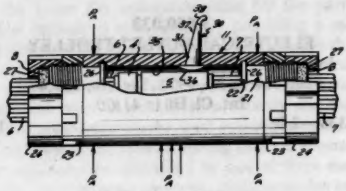
An electrical connector assembly for effecting releasable connection to a printed circuit board according to the present invention comprises the use of resilient insulating material and at least one contact releasably mounted in the housing, and the housing being formed with feet projecting below the floor of the housing for penetrating apertures in and engaging the underside of the circuit board.

3,680,036
ELECTRICAL CONNECTOR

Marvin J. McCamis, Pocasset, and George W. Gibson, E. Falmouth, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 17, 1970, Ser. No. 72,963
Int. Cl. H01r 13/52
U.S. Cl. 339—60 M 1 Claim

An undersea electrical connector is disclosed which can quickly effect a disconnect between two undersea cables by the application of a large tensional force across the connector which causes the connector to disengage. The connector is

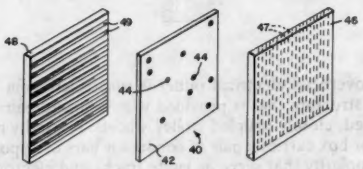


pressurized to prevent the collapse of the flexible connector housing which permits the rapid disconnect without further mechanical detents or escape mechanisms.

3,680,037
ELECTRICAL INTERCONNECTOR

Stewart Nellis, Colts Neck; Joseph Ellis Kopf, Cranford, both of N.J., and Adrian R. Reti, Cambridge, Mass., assignors to Technical Wire Products Inc., Cranford, N.J.

Filed Nov. 5, 1970, Ser. No. 87,172
Int. Cl. H01r 13/24; H05k 1/04
U.S. Cl. 339—61 M 13 Claims

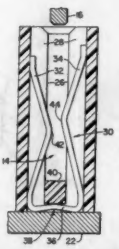


Compressible electrical interconnectors have dielectric holder sheets with compressible conductive plastic rods extending through the sheets. When electrical contacts are pressed against opposite ends of the rods, interconnection is completed.

3,680,038
ELECTRICAL CONNECTOR WITH VIBRATION RESISTANCE

Lennart B. Johnson, Topsfield, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed April 28, 1970, Ser. No. 32,692
Int. Cl. H01r 13/62
U.S. Cl. 339—65 10 Claims



A printed circuit card connector having upwardly extending card guides at its ends, each card guide having a heightwise end slot formed therein to receive the side edge of an inserted circuit card. Retention of the printed circuit card in the connector is enhanced by a pair of spaced, heightwise extending,

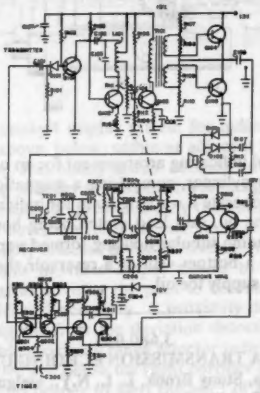
resilient fingers which are supported within each end slot and which are adapted to receive and grip the circuit card therebetween. Each pair of fingers engages opposite faces of the inserted circuit card at a level which is above the socket and the fingers are of unequal length to retard vibration or common resonance. The fingers also may be employed as electrical contacts or terminals.

3,680,039

APPARATUS FOR DETECTING MOVABLE OBJECTS

Thomas K. Tsao, 4306 Sarasota Place, Beltsville, Md.

Filed Oct. 8, 1970, Ser. No. 79,016
Int. Cl. G01s 9/66
U.S. Cl. 340—1 R **2 Claims**



Apparatus for detecting objects by means of ultrasonic waves and echos reflected from objects within a detection zone, the apparatus including a transmitter for generating electric energy at ultrasonic frequencies; means forming pulses of the electric energy; timing means for selectively determining the frequency of said pulses; transducer means for converting electric pulses into ultrasonic pulses and ultrasonic pulses into electric pulses and for projecting said ultrasonic pulses along a narrow beam into a detection zone and receiving echo pulses from said detection zone; receiver means connected to said transducer for detecting and amplifying said electromagnetic pulses, control means connected to said receiver for indicating the presence of objects in the detection zone, gating means in said connection for limiting the pulses transmitted to said control device to those reflected from within the detection zone and means for simultaneously and selectively controlling the power output of the transmitter and the gain of the receiver.

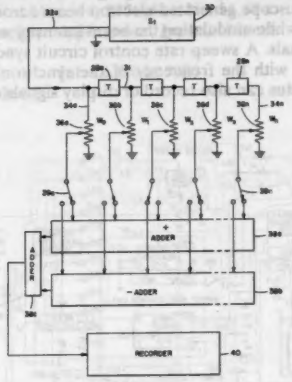
3,680,040

METHOD AND APPARATUS FOR THE ANALYSIS OF SEISMIC RECORDS

Daniel Silverman, and Sven Treitel, both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Continuation of Ser. No. 450,806, April 26, 1965, abandoned. This application May 4, 1970, Ser. No. 34,514
Int. Cl. G01v 1/28
U.S. Cl. 340—15.5 R **12 Claims**

A method of analyzing a recorded seismic signal. An input signal impressed on the earth is controlled by a known drive signal. A Wiener operator W is derived from (a) this known drive signal and (b) a selected desired output signal. Reflections from the transmitted input signal are recorded. The received or recorded signal is convolved with the Wiener operator W to obtain the convolution thereof. The convolution contains compressed signals to indicate reflections from subsurface interfaces. Any known input signal and any selected output signal can be used.

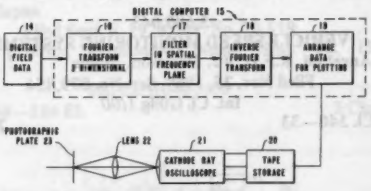


3,680,041

FILTERED COHERENT WAVE HOLOGRAPHY

Noyes D. Smith, Jr., Bellaire, Tex., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 659,084, Aug. 8, 1967. This application Nov. 28, 1969, Ser. No. 880,579
Int. Cl. G01v 1/32
U.S. Cl. 340—15.5 DP **2 Claims**



A process for producing a hologram by illuminating an object with a coherent elastic wave is improved by digitally depicting the substantially full dynamic range of the mixture of reference wave energy and diffracted wave energy that forms the holographic data, subjecting the digitally depicted data to a low-pass spatial filtration, and displaying the hologram that is provided by the filtered data.

3,680,042

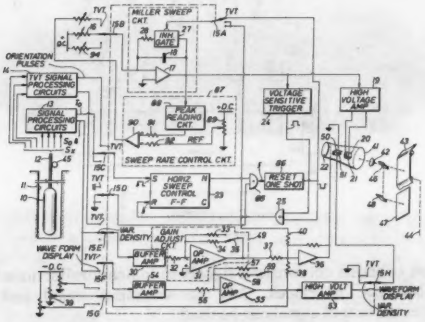
METHODS AND APPARATUS FOR RECORDING WELL LOGGING DATA

Theodore F. Brunn, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 26, 1969, Ser. No. 829,159
Int. Cl. G01v 1/24
U.S. Cl. 340—18 **23 Claims**

In accordance with an illustrative embodiment of the present invention, a recording and displaying apparatus is adapted to record or display well logging signals derived from a well tool in a borehole. The apparatus can record signals derived from a well logging tool of the type which rotates an acoustic transducer while emitting and receiving energy therefrom to thereby scan a borehole wall. Information signals representative of the energy received by the rotating trans-

ducer and synchronizing signals representative of the orientation of the transducer are transmitted from the well tool to the surface of the earth. At the surface of the earth, the recording apparatus uses the synchronizing signals to control the sweep of an oscilloscope generated electron beam across an indicating means while modulating the beam intensity with the information signals. A sweep rate control circuit synchronizes the sweep rate with the frequency of the synchronizing signals. The apparatus can also record or display signals derived from



a well tool of the type which repetitively emits acoustic energy from a transmitter and receives the energy with one or more nearby acoustic receivers to produce information signals representative of the received energy and synchronizing signals representative of the time of energy emission. The synchronizing signals cause the electron beam to sweep across the indicating means and the information signals are used to modulate either the intensity or vertical deflection of the beam.

3,680,043

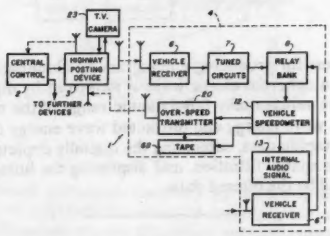
VEHICLE SPEED MONITORING SYSTEMS

Paul Angeloni, R.F.D. #2, Harrison, Maine

Filed Nov. 25, 1969, Ser. No. 879,854

Int. Cl. G08g 1/00

U.S. Cl. 340—33 **20 Claims**



A system is disclosed for monitoring speed of highway vehicles from a central control station. The system includes posting devices positioned at intervals along the highway and adapted to receive a speed message from the control station and transmit the speed message to passing vehicles in a limited region of the highway in the form of an r-f signal. Each vehicle contains an r-f receiver which is connected to the vehicle speedometer or other vehicle indication means in a manner that will provide, upon the occurrence of some predetermined excessive speed, an indication to the driver of the vehicle that the speed limit at that particular region of the highway is being exceeded. There is provision, also, for means for reporting back to the control station the occurrence of excessive vehicular speed as well as for providing accident warnings and the like.

3,680,044

LIQUID LEVEL INDICATING ARRANGEMENT FOR VEHICLES

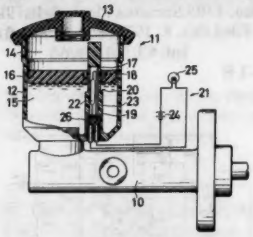
Kadru Tsubouchi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 5, 1971, Ser. No. 112,914

Claims priority, application Japan, Feb. 10, 1970, 45/13154

Int. Cl. G08b 21/00

U.S. Cl. 340—59 **6 Claims**



A liquid level indicating arrangement for an oil reservoir of a brake master cylinder, comprising a magnetically actuated lead switch to operate a warning lamp for indicating the need of supplying the oil, said lead switch being housed within a coaxially extending tubular housing formed vertically to and integrally with a bottom wall of a reservoir shell whereby it may be easy to supply the oil.

3,680,045

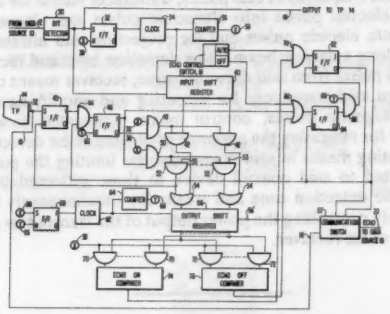
DATA TRANSMISSION ECHOING UNIT

Reuven Meidan, Stony Brook, L. I., N.Y., assignor to Applied Digital Data Systems, Inc.

Continuation-in-part of Ser. No. 856,538, Sept. 10, 1969, abandoned. This application Aug. 18, 1970, Ser. No. 64,730

Int. Cl. G08c 25/02

U.S. Cl. 340—146.1 BA **9 Claims**

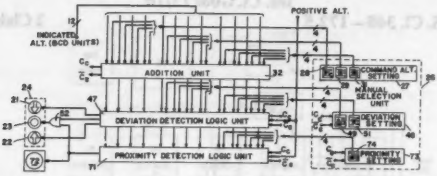


Apparatus for receiving pulse coded signals from a signal source such as an automatic data processing system and for returning the same signals to that source to permit detection and correction of transmission errors. The signals are applied to an input memory device and to the local utilizing device. Once a complete character is in that memory, it is compared with precoded On and Off commands to determine whether it is a control signal for the apparatus. If the apparatus is on, the character is returned to the signal source. If a signal is generated at the local utilizing device, the apparatus switches itself off to prevent confusion of signals, and the apparatus sends the signal source a character indicating it has switched off.

3,680,046
ALERTING SYSTEM

John M. K. Bergey, Doylestown, and Stephen Kalatucka, Willow Grove, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed Dec. 18, 1970, Ser. No. 99,563
Int. Cl. G06f 7/02, 7/385
U.S. Cl. 340—146.2 12 Claims

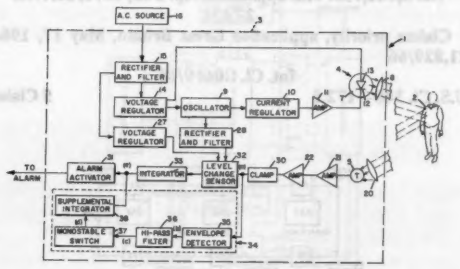


An aircraft cockpit display system for indicating whether the aircraft is above, below, within or adjacent to a preset altitude corridor. The binary coded decimal output of an altitude reporting encoder is combined with a signal indicative of the assigned altitude preselected by thumbwheel switches. The computed deviation from the command altitude is compared to a similarly selected deviation setting. A deviation detection logic unit provides output signals to shape-coded, lightable indicators advising the pilot to descend or climb to the flight corridor, if necessary. A proximity detection logic unit receives signals from the deviation detection logic unit and an adjustable proximity range selector indicative of proximity zones above and below the flight corridor to drive an indicator and audio beeper to alert the pilot of approaches to and departures from the flight corridor.

3,680,047
PARAMETRIC INTEGRATOR FOR CONDITION-RESPONSIVE SYSTEMS

David E. Perlman, Rochester, N.Y., assignor to Detection Systems, Inc., East Rochester, N.Y.

Filed Dec. 15, 1970, Ser. No. 98,353
Int. Cl. G08b 13/00
U.S. Cl. 340—258 B 2 Claims

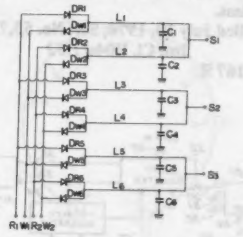


A parametric integrator adapted for use in condition-responsive systems such as intruder detection devices. The integrator is normally inactive until a transient signal, uncharacteristic of a change in the condition being monitored, is received at the system input. The integrator is then rapidly switched into system circuitry for a predetermined time interval to reduce system sensitivity and thereby avoid the possibility of false alarming in response to the transient.

3,680,048
CORE DRIVE AND BIASING SYSTEM

Joichiro Ezaki, Funabashi, Japan, assignor to TDK Electronics Company Ltd., Tokyo, Japan

Filed March 4, 1970, Ser. No. 16,404
Claims priority, application Japan, March 8, 1969, 44/17724
Int. Cl. H04q 9/00
U.S. Cl. 340—166 R 4 Claims

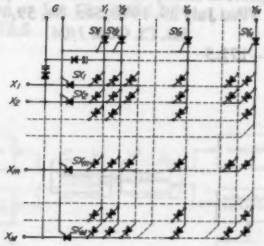


A read/write drive circuit for a circuit having a driver and a plurality of read/write circuit units connected in parallel thereto, wherein when one desired circuit unit is driven with a potential of one polarity, a potential of the opposite polarity is applied to other circuit units, thereby preventing a flow of current through the other circuit units and through an inadvertent ground path including stray capacitances. A higher speed operation is feasible because no charging current flows through the other circuit units that are not driven.

3,680,049
DISPLAY DEVICE AND METHOD FOR SCANNING SAID DEVICE

Toshihisa Tsukada, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 8, 1970, Ser. No. 70,119
Claims priority, application Japan, Sept. 12, 1969, 44/71922
Int. Cl. H04q 3/00
U.S. Cl. 340—166 EL 5 Claims



A display device comprising a number of light emitting diodes disposed in a matrix array, a switching element being connected in series with each of the horizontal (row) and the vertical (column) scanning lines; said array being scanned in such a manner that the column lines are scanned with a pulse consisting of a negative part and a subsequent positive part while the row lines which are always biased with a negative voltage of a value smaller than that of the said negative part of the column scanning pulse are scanned with a negative pulse of a value larger than that of the said negative part of the column scanning pulse, a trigger pulse being applied to the gate electrode of the switching elements in synchronization with the column scanning pulse for a column which includes a light emitting diode to be energized, thus a light emitting diode

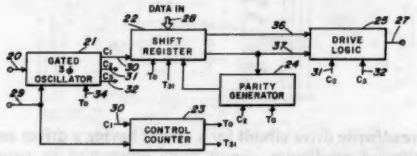
which has been transferred to a conductive state being returned to the non-conductive state by the negative part of the column scanning pulse just before the relevant column is scanned for the second time, a bright display being thereby ensured.

3,680,050

SERIAL DIGITAL PULSE PHASE INTERFACE DRIVER AND RECEIVER

Jon H. Griffin, Rockville, Md., assignor to General Electric, Westlynn, Mass.

Filed July 10, 1970, Ser. No. 53,751
Int. Cl. H04q 1/32
U.S. Cl. 340—167 R **9 Claims**



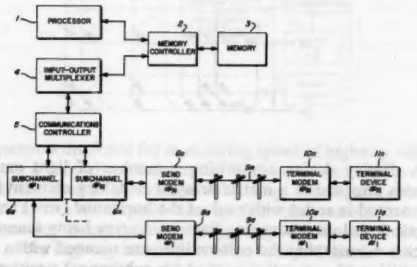
A digital transmission system comprising a transmitter and receiver capable of transmitting and receiving digital data at high bit rates in a noisy environment, utilizing transformer coupling to a single transmission line, serial to parallel and parallel to serial conversion, and parity generation and checking circuits. The system is capable of operation from a 5 volt source and of being densely packaged. The serial digital receiver utilizes a decoding and filtering circuit which provides high noise immunity for the system. Data transmitted and received is in the form of pulses having a positive and negative peak so as to eliminate the necessity of a separate syne line.

3,680,051

APPARATUS FOR MAINTAINING CHARACTER SYNCHRONIZATION IN A DATA COMMUNICATION SYSTEM

Ronald W. Blessin, and James A. Kennedy, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc.

Filed July 29, 1970, Ser. No. 59,094
Int. Cl. G06f 1/04
U.S. Cl. 340—172.5 **4 Claims**



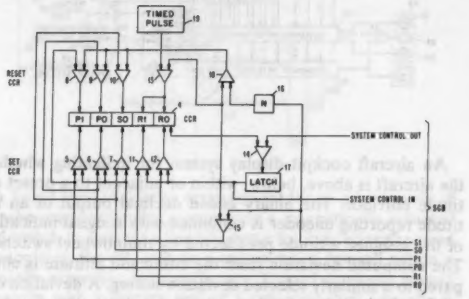
Apparatus for maintaining character synchronization in a data communication system comprises a buffer to store characters being transferred from a communications controller to a terminal device, a shift register connected between the buffer and the terminal device and a source of fill characters which provides characters to fill any gap between message characters provided by the communications controller.

3,680,052

CONFIGURATION CONTROL OF DATA PROCESSING SYSTEM UNITS

Jeganandaraj A. Arulpragasam; Dennis C. Binks, both of Chandlers Ford; John J. Holmes, Winchester; John F. Minshull, Winchester; Martin C. Pinnell, Winchester, and Clive Williams, Chandlers Ford, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 20, 1970, Ser. No. 13,251
Int. Cl. G06f 15/16
U.S. Cl. 340—172.5 **2 Claims**



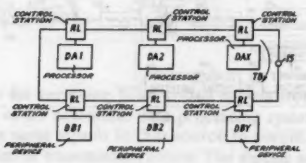
The disclosed data processing system, which includes plural processing units, plural storage units and plural input/output units, can be configured into various groups of interconnected units. In response to a single pattern of signals broadcast to configuration control registers in each unit, a particular unit can be disconnected from one group of units and connected to another group. This invention relates to a data processing system, and more particularly to a system including plural units which, in response to a single program instruction, can be configured into various interconnected groups of units.

3,680,053

DATA TRANSMISSION SYSTEMS

John Michael Cotton, and Peter Anthony Lloyd, both of Taplow, England, assignors to Plessey BTR Limited, Taplow, England

Continuation-in-part of Ser. No. 638,803, May 15, 1967, Pat. No. 3,444,755. This application April 13, 1970, Ser. No. 27,631
Claims priority, application Great Britain, May 17, 1966, 21,829/66
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 **5 Claims**

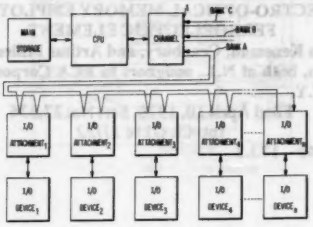


A data transmission highway, in the form of a ring has a plurality of data handling devices connected thereto. A different priority number is allocated to each device. When a device wishes to transmit data it first transmits its own priority number on the highway and the device having the highest priority number of the devices which wish to transmit is allowed to seize the highway.

3,680,054
INPUT/OUTPUT CHANNEL

William H. Bunker, Rochester; John W. Kerr, Byron; Nicholas S. Mitrofanoff, and Kent W. Swearingen, both of Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 6, 1970, Ser. No. 52,488
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 10 Claims

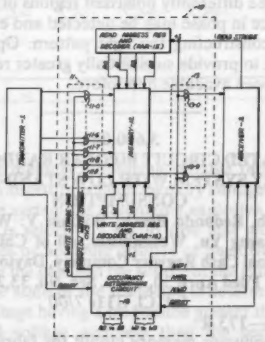


The invention relates to a unique input/output channel used in a data processing system. The channel couples a plurality of external devices and their control units to a central processing unit. The configuration of the channel is such that it allows each of the control units direct control over many of the central processing unit functions during an input/output cycle. It allows each of the control units to share the system's main storage and central processing unit during these cycles. The design further allows for local store registers located in the central processing unit to be used as address registers for the external devices.

3,680,055
BUFFER MEMORY HAVING READ AND WRITE ADDRESS COMPARISON FOR INDICATING OCCUPANCY

Roy A. Wilson, Monrovia, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 6, 1970, Ser. No. 52,514
Int. Cl. G06f 13/06
U.S. Cl. 340—172.5 7 Claims

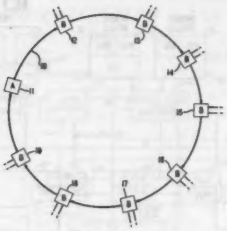


A buffering system has a memory with a plurality of addressable storage locations, an address register for writing, a separate address register for reading, and occupancy determining circuitry which develops indicating signals useful in controlling the flow of data through the buffer. Among these useful signals are attention needed signals, next word occupied signals and overflow signals for notifying a receiving device of the type of action that is appropriate in reading data from the buffer.

3,680,056
USE EQUALIZATION ON CLOSED LOOP MESSAGE BLOCK TRANSMISSION SYSTEMS

Walter Joseph Kropfl, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 8, 1970, Ser. No. 79,080
Int. Cl. H04j 3/08
U.S. Cl. 340—172.5 10 Claims

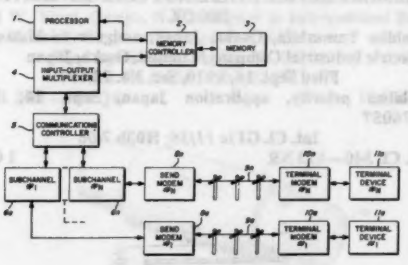


A closed loop transmission system is described in which a plurality of stations have access to the loop to write messages into and read messages from standard-sized message blocks transmitted around the loop. One station provides regeneration of all message blocks. In order to prevent one or more stations from monopolizing the use of the transmission loop, a field is reserved in each message block for setting flags each time a station desires to transmit a message but is unable to do so because the message block is filled. Originating stations are thereafter prevented from initiating a second message until all other requesting stations have been served, as indicated by the flagged field in the message block.

3,680,057
DATA COMMUNICATIONS SUBCHANNEL

Ronald W. Blessin, and James A. Kennedy, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 2, 1970, Ser. No. 86,093
Int. Cl. G06f 13/04
U.S. Cl. 340—172.5 6 Claims

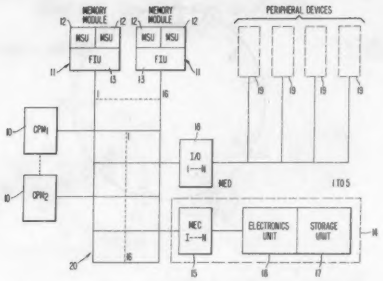


A data communications subchannel uses input signals and decoding logic to select the baud rate, the length of message characters, the mode of operation and the number of stop bits in a message character used in transmitting binary message characters between a data communications subchannel and a terminal device.

3,680,058
INFORMATION PROCESSING SYSTEM HAVING FREE FIELD STORAGE FOR NESTED PROCESSES

Alfred J. De Santis, Norristown; LeRoy W. Beers, Exton; James A. White, West Chester, and John A. Moysey, Malvern, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 28, 1969, Ser. No. 880,535
Int. Cl. G06f 15/16
U.S. Cl. 340—172.5 17 Claims

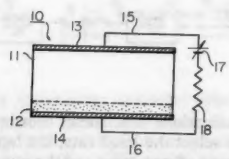


This disclosure relates to an information processing system employing plural processors which system is provided with a free field storage array to accommodate operands and data segments of any size and format. Each of the respective memory storage units is, in fact, structure oriented. However, pairs of such storage units are provided with isolation units having the capability of extracting and inserting fields of information independent of the memory structure. During a fetching operation, the isolation unit is adapted to fetch two contiguous parallel words and a shifting network or barrel switch is provided to position the desired field for transfer to the requesting device. During a store operation, the shifting network or barrel switch is employed to position incoming data into the proper bit location of the memory. The selected field is determined by the starting bit and the length field information provided by the memory control word and also by the type of operation requested. Each of the requesting devices is provided with its own interface unit that contains logic to construct a memory control word for each memory module involved in a fetch or store operation. In this manner, the entire array of memory units will appear to each of the requesting devices as being free field or without structure.

3,680,059
MEMORY DEVICE UTILIZING PULSE GENERATING DIODE

Sadahiko Yamashita, Osaka, Japan, assignor to Matsushita electric Industrial Company, Limited, Osaka, Japan

Filed Sept. 16, 1970, Ser. No. 72,697
Claims priority, application Japan, Sept. 14, 1969, 44/76057
Int. Cl. G11c 11/36; H03b 7/06
U.S. Cl. 340—173 NR 1 Claim

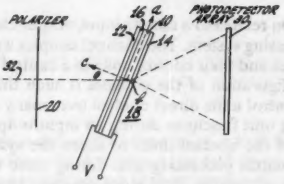


A memory device comprising a circuit including in combination a gate diode and an oscillatory loop having a pulse generating diode. The oscillatory loop is adapted to produce a pulse train to be stored and to cease oscillate respectively in response to application thereto of a single and negative trigger pulse when the pulse generating diode is biased at a voltage between the oscillation starting and terminating voltages of the diode. With a reading-out pulse being applied to the loop, a single pulse or a pulse train is obtained from the stored pulse train. The pulse generating diode employed in the device is a novel having a ν-N structure.

3,680,060
ELECTRO-OPTICAL MEMORY EMPLOYING FERROELECTRIC ELEMENT

Scott Allen Keneman, Cranbury, and Arthur Miller, Princeton Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed April 10, 1970, Ser. No. 27,336
Int. Cl. G11c 11/22
U.S. Cl. 340—173.2 7 Claims



A photoconductive-ferroelectric device is employed as an erasable storage medium for recording and reading light patterns. The ferroelectric material may be a bismuth titanate crystal and its polarization pattern (corresponding to the recorded light pattern) is read out by directing linearly polarized light at the *ab*-face of the crystal, at an angle to the *c*-axis of the crystal and preferably perpendicular to the *b*-axis of the crystal. With proper choice of the direction of linear polarization, the incident light is phase delayed different amounts in the differently polarized regions of the crystal and this difference in phase may be detected and employed as the basis for reconstructing the light pattern. Operation in this way is found to provide substantially greater readout efficiency than has been available heretofore.

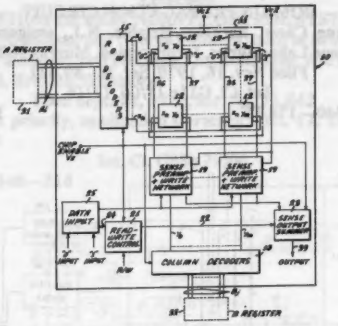
3,680,061
INTEGRATED CIRCUIT BIPOLAR RANDOM ACCESS MEMORY SYSTEM WITH LOW STAND-BY POWER CONSUMPTION

Majid Arbab, Redondo Beach; William Y. Wong, Torrance, and Kuenseng Yu, Westminster, all of Calif., assignors to The National Cash Register Company, Dayton, Ohio

Filed April 30, 1970, Ser. No. 33,253
Int. Cl. G11c 7/00
U.S. Cl. 340—173 R 3 Claims

A semiconductor memory circuit for fabrication on a LSI chip. The circuit on the chip corresponding to a digit plane of a computer memory comprises a two-coordinate array of memory cells and all the service circuits associated with the operation of the memory array. During standby or idling operation of the memory circuit all of the service circuits are de-energized such that the only power dissipated is that resulting from the current flow required for retaining the binary digits stored in the memory cells. In order to operate the memory circuit, a chip enable pulse is applied to energize all

the service circuits thus causing the memory circuit to momentarily operate at a higher power dissipation level during

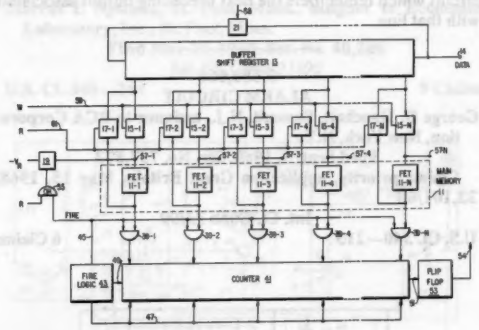


which either a read or write function is performed on a selected memory cell of the array.

3,680,062
RESETTABLE NON-VOLATILE MEMORY UTILIZING VARIABLE THRESHOLD VOLTAGE DEVICES

James R. Cricchi, Baltimore, Md., assignor to Westinghouse Electric Corporaton, Pittsburgh, Pa.

Filed June 24, 1970, Ser. No. 49,101
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **12 Claims**

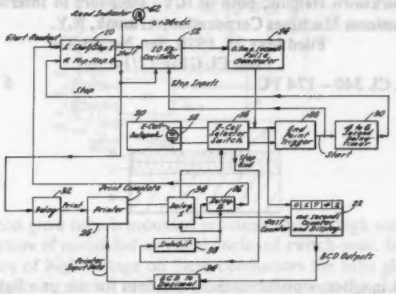


A non-volatile memory employing variable threshold voltage field effect transistors as main memory storage elements is utilized in a fuse system for detonating explosive projectiles. Each transistor is selectively set to first and second stable threshold voltages by applying positive or negative polarizing voltages between the gate and the source of the transistor. The threshold voltage state of the transistor is determined by applying a read voltage having a magnitude greater than the first stable threshold voltage and less than the second stable threshold voltage. The transistor is activated only if it has assumed the first threshold voltage. A buffer shift register is provided for receiving a serial data input and producing a corresponding parallel output of positive and negative polarizing voltages. The information in the buffer shift register is transferred to the main memory by a plurality of write transmission gates and is transferred from the main memory to the shift register by a plurality of read transmission gates. A fire command generated by the firing of a projectile, such as an artillery shell, transfers the information in the main memory to a counter. The counter is then operated until overflow occurs and a signal is generated by the counter to detonate the explosive projectile.

3,680,063
AUTOMATIC DATA READOUT

James J. Pinto, San Diego, Calif., assignor to The Bissett-Berman Corporation, Santa Monica, Calif.

Filed July 10, 1970, Ser. No. 53,749
Int. Cl. G11c *13/02*
U.S. Cl. 340—173 CH **26 Claims**

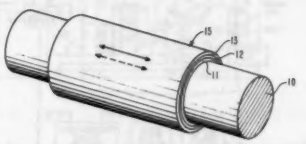


An automatic data readout is provided to extract data stored in a plurality of electrolytic cells, such as 20 cells, which cells form a data pack to store 20 channels of information. The automatic data readout reads out the 20 channels of information stored in the cells, either in a manual mode or automatically in sequence 1 through 20. A printer operates to record the data readout from a first one of the channels before passing on to read out a next channel of information. The readout is accomplished by deplating the electrolytic cells by passing a plurality of pulses each having a fixed charge value through the cell in a direction to deplate the electrolytic cell. When the voltage across the electrolytic cell rises above a particular value, the pulses are discontinued. However, if the voltage across the cell then drops below a particular value within a predetermined time, such as 4 to 6 seconds, then the readout pulses are continued. The number of pulses fed to the electrolytic cell represents the true digital count of the stored integral in the electrolytic cell.

3,680,064
COAXIAL ANISOTROPIC MAGNETIC FILM STORAGE DEVICE WITH BURST CYCLE WRITING

Albert W. Vinal, Owego, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed April 23, 1970, Ser. No. 31,211
Int. Cl. G11c *11/04*, *11/14*
U.S. Cl. 340—174 QA **10 Claims**



A memory cell composed of a pair of coaxial anisotropic magnetic films separated by a coaxial barrier film represents binary information by anti-parallel magnetic fields in the pair of magnetic films. Burst cycle writing is used to change the binary storage state of the memory cell. This involves the application of N word current pulses I_w each of which passes along a conductor enclosed by coaxial magnetic film layers to apply

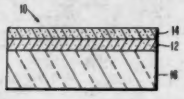
a magnetic field to said coaxial magnetic film layers and simultaneously with each such word current pulse I_w a pair of bipolar bit current pulses I_b are applied to an insulated conductor which extends around and in non-electrical contact with the outer most magnetic film of the memory cell to apply an axial magnetic field to said coaxial magnetic films. The burst number N is inversely proportional to the amplitude of the word current pulses and the bit current pulses.

3,680,065

NONVOLATILE MAGNETO-OPTICAL MEMORY ELEMENT AND A METHOD OF WRITING THEREON

George S. Almasi, Purdy Station, and Eugene R. Genovese, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 25, 1970, Ser. No. 40,234
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 YC 6 Claims



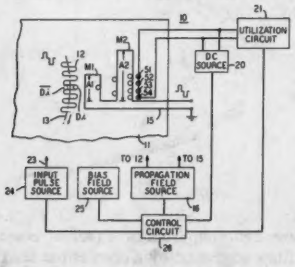
A magneto-optical memory element for use as a light beam addressable memory element is formed of permalloy and europium oxide films arranged in adjoining layers. Information is written into the permalloy layer while the device is at room temperature. The ambient temperature is then reduced below the Curie point of europium oxide causing the magnetization of the permalloy layer to be directly transferred by negative or anti-parallel exchange coupling to the europium oxide layer. The europium oxide then preserves the stored information in a form suitable for optical read-out which will take place at this low temperature. The device has the advantage that if the ambient temperature accidentally should rise above the Curie point of europium oxide going even as high as room temperature, the stored information will be preserved in the permalloy film until the temperature again is brought below the Curie point of europium oxide. Whereupon the europium oxide film is restored to its previous magnetic state by negative exchange coupling. Thus, the subject magneto-optical memory device is nonvolatile under fluctuating temperature conditions.

3,680,066

SINGLE WALL DOMAIN FANOUT CIRCUIT

John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 8, 1971, Ser. No. 160,842
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF 11 Claims



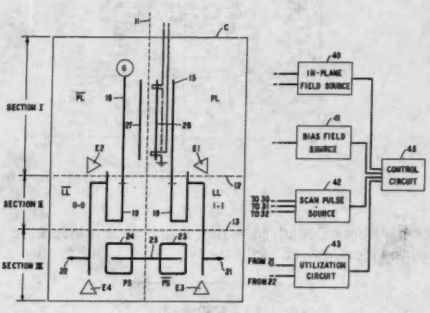
A single wall domain fanout circuit is provided by an electrical conductor of serpentine geometry having consecutive loops of increasing amplitude. Increasing numbers of domains, associated with consecutive loops, propagate interactions therebetween responsive to an information domain.

3,680,067

DOMAIN PROPAGATION CIRCUIT

Woo Foung Chow, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 16, 1970, Ser. No. 89,821
Int. Cl. G11c *15/00, 11/14*
U.S. Cl. 340—174 TF 15 Claims



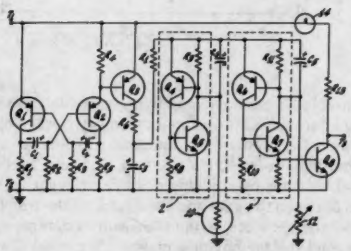
An autonomous scanning circuit is realized by an arrangement of magnetically soft elements on the surface of a material in which single wall domains can be moved. Information representative of the conditions of a set of lines is stored in a domain register and compared with that of a previous scan period similarly stored. The expected one of two significant outputs from any given line is controlled by a unique domain circuit which remembers the next preceding output associated with that line.

3,680,068

ALARM CIRCUIT

George D. Hanchett, Summit, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 5, 1968, Ser. No. 757,573
Claims priority, application Great Britain, May 15, 1968, 23,101/68
Int. Cl. G08b *23/00*
U.S. Cl. 340—213 6 Claims



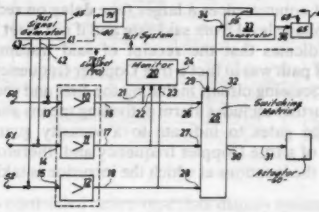
Disclosed is an alarm circuit for detecting change in the condition of an ambient being monitored. Two voltage dependent regenerative switches are connected in parallel with a power supply that provides an intermittent voltage. A condition sensitive element is coupled to the circuit to cause one of said regenerative switches to be in a conducting state as a function of the condition being monitored. When a change occurs in the ambient, the other regenerative switch becomes

conductive thereby activating an alarm device which is coupled thereto.

3,680,069
TESTING OF REDUNDANT CONTROL SYSTEMS

Dietrich Neumann, and George Pattberg, both of Bremen, Germany, assignors to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany

Filed Sept. 14, 1970, Ser. No. 71,842
Claims priority, application Germany, Oct. 17, 1969, P 19 52 349.0
Int. Cl. G08b 29/00
U.S. Cl. 340—214 **20 Claims**

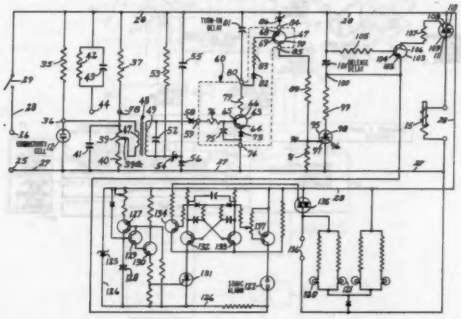


Testing equipment for aircraft, redundant control systems provides preliminary test of the testing equipment, then tests operativeness of the monitor which detects normally parallel operation of these systems and, finally, parallel operation of the control circuits is tested with the aid of the monitor.

3,680,070
ELECTRONIC CONTROL MEANS FOR DISPENSING APPARATUS

Marcus I. Nystuen, St. Paul, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed May 25, 1970, Ser. No. 40,206
Int. Cl. G08b 21/00
U.S. Cl. 340—244 **9 Claims**

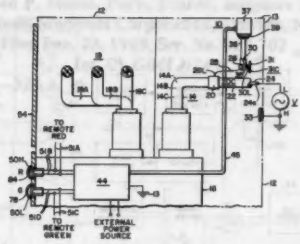


An electrical bridge circuit having a conductivity cell in one leg thereof, normally biased away from the null point so that a signal is produced by the bridge when the conductivity cell is operating at a desired set point. A semiconductor switching circuit is attached to a solenoid valve to vary material added to a solution, such as soap mixed with water. A combination of switching circuit bias, the signal from the bridge and a signal platform produced by a zener diode during portions of the positive cycle of an alternating power source, normally maintain the switch in a non-conducting state but sufficient variation of the conductivity cell in a direction caused by low conductivity, or too little material in the solution, produces a sufficient signal to switch the semiconductor switch into a conducting state to operate the solenoid valve.

3,680,071
VOLTAGE INDICATOR FOR HIGH VOLTAGE SWITCHGEAR

Richard J. Burgoon, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 24, 1970, Ser. No. 101,347
Int. Cl. G08b 21/00
U.S. Cl. 340—248 R **14 Claims**

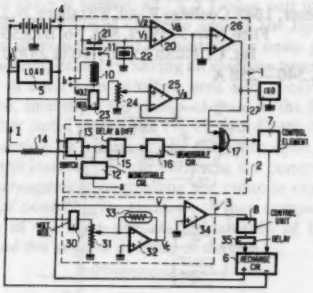


A neon glow tube is mounted proximate to the high voltage conductors of metalclad or metal enclosed switch-gear. In the presence of high voltage on these conductors the tube glows. A light sensing device such as a cesium cell detects the glow or light from the neon tube and converts it to electrical energy which may be amplified through a suitable amplifying means and transmitted to a remote indicator. Capacitive coupling between the metal housing of the switchgear and a flat plate attached to the flow tube is used to complete the effective circuit for the glow tube. The glow tube and cesium cell may be mounted within a porcelain enclosed cylinder to avoid the effect of ambient light.

3,680,072
STORAGE BATTERY MONITORING APPARATUS

Gerard Charbonnier, Marolles-en-Hurepoix, and Gerard Gauthier, Montrouge, both of France, assignors to Compagnie Generale D'Automatisme, Paris, France

Filed Jan. 26, 1971, Ser. No. 109,918
Int. Cl. G08b 21/00; H02j 7/00
U.S. Cl. 340—249 **12 Claims**

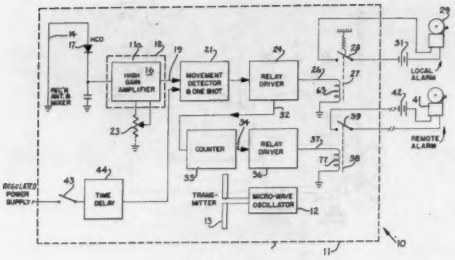


An apparatus for monitoring the charge of a storage battery which gives an indication of the state of the charge. The charge is monitored by placing a current pulse through the internal resistance of the battery and monitoring the change in voltage at the terminals of the battery. The apparatus also includes a recharging circuit for recharging the battery when its charge falls below a predetermined level and a control circuit for stopping the recharging of the battery when the battery becomes fully charged.

3,680,073
INTRUSION ALARM SYSTEM

Harold D. Humphrey, and Richard O. Juengel, both of San Jose, Calif., assignors to Electro-Security Devices, San Jose, Calif.

Filed Feb. 18, 1970, Ser. No. 12,392
Int. Cl. G08b 13/18
U.S. Cl. 340—258 A **6 Claims**

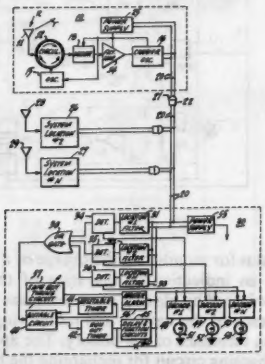


An intrusion alarm system for monitoring a spacial zone to detect the occurrence of movement of an object within the zone consists of an oscillator providing R.F. signals from a radiating antenna coupled to the oscillator to propagate an R.F. field of signals within the zone being monitored, and a chassis having a portion shielded from the R.F. propagation of the antenna and disposed adjacent the antenna. The system further includes a receiving antenna adjacent the chassis for receiving the signals and modulations thereof caused by movement of an object within the field. A high gain amplifier, carried by the shielded portion of the chassis, amplifies the modulations of the received signals. Detecting means coupled to the amplifier provides an output signal in response to the amplified modulations. The output signal is adapted to activate means for manifesting occurrence of a moving object within the zone. Both local and remote alarms are actuated by the detecting system, the remote alarm being actuated only upon the occurrence of a predetermined number of detected movements.

3,680,074
INTRUSION SYSTEMS EMPLOYING DIGITAL PROCESSING CIRCUITRY

Zeev Lieser, 1048 Coolidge Road, Elizabeth, N.J.

Filed Nov. 3, 1969, Ser. No. 873,550
Int. Cl. G08b 25/00; H03k 23/00
U.S. Cl. 340—258 A **12 Claims**



A plurality of Doppler systems are utilized to monitor a plurality of locations against intrusions by radiating energy covering the volume enclosed by said location and providing a Doppler frequency shift for the presence of an intruder. Each of said Doppler signals if present are impressed upon a carrier frequency and transmitted for propagated along a common path to a monitor location.

A plurality of detector circuits at the monitor location each respond to one of said carrier frequencies to provide an output signal representative of said Doppler frequency generated by said one location. A gating circuit has a plurality of input terminals each coupled to one of said detector circuits to provide an output signal between first and second levels having a repetition rate determined by said Doppler frequency.

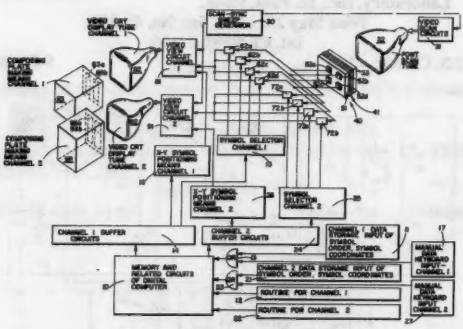
A first timing circuit is caused to initiate a time delay upon activation thereof by said first voltage level from said gate and resets upon receipt of said second voltage level. A second timing circuit commmences a larger time delay on receipt of said second voltage level from said gate and if not reset by said first circuit indicates that the receipt of said transmitted signal along said path was in fact a true Doppler frequency.

The processing circuit including the first and second timing circuits further includes alarm activating means and a plurality of location gates to indicate to a security guard both the presence of a true Doppler frequency and, therefore an intrusion, and the locations at which the intrusion is taking place.

3,680,075
SYSTEM FOR COMPOSITION OF SYMBOLS

Cedric F. O'Donnell, Fullerton; Richard C. Platzek, Whittier, and James S. Sweeney, Laguna Beach, all of Calif., assignors to North American Rockwell Corporation

Filed May 4, 1970, Ser. No. 34,232
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **16 Claims**

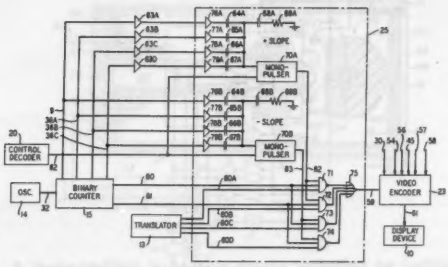

VIDEO CKT. CHANNEL 1
VIDEO CKT. CHANNEL 2
SYMBOL SELECTOR CHANNEL 1
SYMBOL SELECTOR CHANNEL 2
CHANNEL 1 BUFFER CIRCUITS
CHANNEL 2 BUFFER CIRCUITS
MEMORY AND RELATED CIRCUITS OF DIGITAL COMPUTER
ROUTINE FOR CHANNEL 1
ROUTINE FOR CHANNEL 2

A system for composition of symbols in inclusive of a first means for scanning a plurality of the symbols simultaneously. The system comprises a second means which is responsive to the first means for imaging the scanning of all the symbols simultaneously and for sensing the scanned symbols. The system also provides for a third means which includes a computer system and which is in communication with the second means for automatically selecting the symbols in a predetermined order and placing the symbols in predetermined locations thereby enabling a preselected composition of the symbols to be created. A fourth means is in communication with the third means for permanently recording the composition on a permanent medium. Symbols may be alternatively injected by a fifth means into the computer portion of the third means by utilization of a manual keyboard.

3,680,076
DATA DISPLAY SYSTEMS

Kenneth John Duffek, Woodridge, and Thomas Hoyt Nolan, Westmont, both of Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed July 13, 1970, Ser. No. 54,399
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 14 Claims

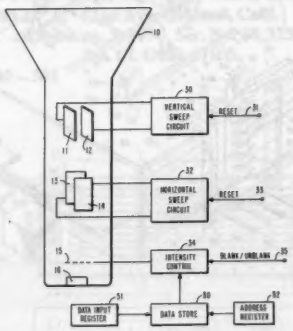


A digitally controlled raster-type data display system utilizes a special circuit for generating the diagonal-line portions of characters to be displayed on the display system comprising a time-delayed monopulser circuit actuated by a plurality of time-constant circuits combinationally selected by selection means within the display system. This results in high resolution of characters displayed while using less circuitry for character generation than previously taught by the art for an equivalent degree of resolution of displayed characters.

3,680,077
METHOD OF SCROLLING INFORMATION DISPLAYED ON CATHODE RAY TUBE

Verlin L. Hoberecht, New Paltz, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 31, 1970, Ser. No. 60,048
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 11 Claims

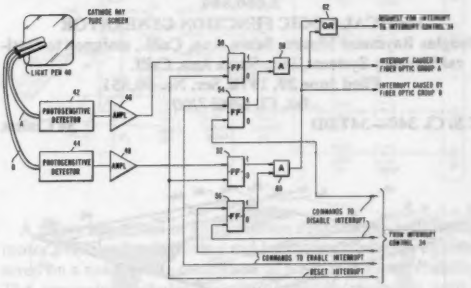


A method of scrolling up or down on the face of a television type display device is described where frames are repetitively generated, and video information cyclically supplied by a storage device is displayed during each frame. The method involves selectively changing the cycle of the frames generated on the face of the cathode ray tube to commence at a home position or initial starting point at any selected storage location in the cyclical storage device. This is accomplished by the method steps of storing a home position character at any storage location in the cyclical storage device, initiating a new frame starting from the home position whenever the home position character is detected, and moving the home position character to different storage locations to scroll up or down.

3,680,078
LIGHT PEN ARRANGEMENT FOR PROVIDING THREE DEGREES OF FREEDOM FOR A LIGHT PEN IN AN INTERACTIVE GRAPHICS SYSTEM

Herbert B. Baskin, Pinole, Calif.; Laszlo A. Belady, Yorktown Heights; Carlo J. Evangelisti, Jefferson Valley, both of N.Y., and Stephen P. Morse, Paris, France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,702
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 2 Claims



A light pen arrangement is described wherein the light pen has three degrees of freedom, viz. two-dimensional translation in the (X,Y) plane of a cathode ray tube screen and rotation about the projection of its own longitudinal axis to the normal of the screen. To sense the angular position of the light pen, at least two independent light sensitive elements, i.e., fiber optic bundles are required, the latter being suitably provided by dividing the bundle of fiber optics emerging from a single light pen into at least two separate groups and having photosensitive transducer respectively associated with each of the separate groups. When the light pen is placed on the screen and its presence there is sensed, an (X,Y) value pair is stored for the location of each light sensitive area of the light pen, i.e., each of the aforementioned separate fiber optic groups. The storing is accomplished by having an electron beam draw lines or points in each light sensitive area and, receiving in response thereto, interrupts for points or lines in the field of view of each fiber optic group, the (X,Y) coordinate of each point or line causing an interrupt and the fiber optic group that picked up the interrupt is now known to the computer or other control arrangement controlling the cathode ray tube. The computer or control arrangement can then compute the (X,Y) location of the light pen as the centroid of the individual areas and the angular position of the pen.

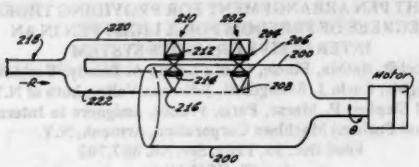
3,680,079
APPARATUS FOR PROVIDING CONVERSION BETWEEN ANALOG AND DIGITAL VALUES

Charles P. Hedges, 3532 B Midwest Drive, Bryan, Tex.

Filed June 8, 1970, Ser. No. 44,001
Int. Cl. G08c 9/00
U.S. Cl. 340—347 P 16 Claims

This invention relates to an encoder or converter which provides a conversion between analog and digital values of a functional relationship between two independent variables. For example, the invention provides a conversion between analog

and digital values of a function R sin θ. The conversion is provided in accordance with the synchronous movement along



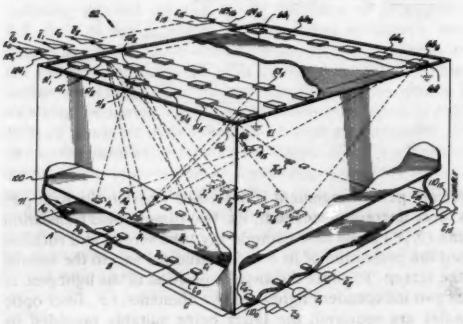
two coordinate axes of a plurality of encoded patterns relative to sensors associated with the patterns.

3,680,080

OPTICAL LOGIC FUNCTION GENERATOR

Douglas Raymond Maure, Santa Ana, Calif., assignor to Optical Memory Systems, Inc., Santa Ana, Calif.

Filed June 29, 1970, Ser. No. 50,551
Int. Cl. G06f 7/00
U.S. Cl. 340—347 DD **34 Claims**



An optical logic function generator, capable of generating a vast number of logical functions, is disclosed. The optical generator comprises a housing for an array of light sensing elements, an array of light emitting elements and an optical mask positioned therebetween. Given m sensors and n emitters, mn portions of a mask are positioned in mn light transmission paths between the sensors and the emitters. The mask portions may either pass or block light, depending on the binary function desired. More than one emitter may be energized simultaneously. At least a pair of sensors are connected in a series electrical circuit between a point of reference potential and an output terminal. Interchangeable masks and selectively operable input and output circuitry provide the capability of performing computer operations with the optical logic disclosed by this invention.

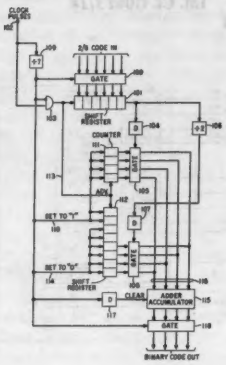
3,680,081

NUMERICAL CONVERSION

Philip C. Richards, Geneva, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 23, 1969, Ser. No. 887,606
Int. Cl. H03k 13/24
U.S. Cl. 340—347 DD **6 Claims**

Conversion apparatus and methods for converting two-out-of-six digital code signals into binary code signals. The numerical value of the positions of the two "1's" in the two-out-of-six code signals are added together, along with a constant, shifted by the value of the position of the leftmost "1." This scheme is implemented by programming a general purpose



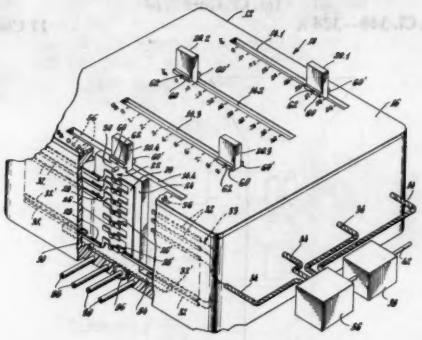
computer, and by special purpose hardware, both using shift registers and adding circuits.

3,680,082

NUMERICAL ENCODING KEYBOARD

Fredric E. Zucker, Stamford, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 18, 1971, Ser. No. 107,175
Int. Cl. G08c 1/00
U.S. Cl. 340—365 **13 Claims**



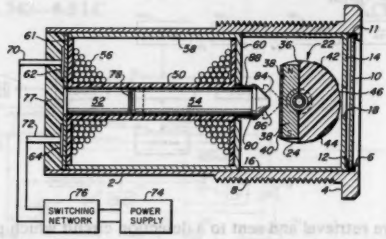
An encoder transmits numerical data in the form of coded bursts of audio frequency tones. The encoder includes levers which move through successive index positions in slots having numerical indicia. Each lever represents a different decimal order digit of the price of merchandise sold. Each lever is provided with a plurality of encoding switches which are moved past stationary switch actuators. Different groups of switch actuators are aligned with successive index positions of the levers to actuate selected pairs of switches according to the numerical indicia with which the levers are aligned. A tone generator is electrically coupled to the switches by a multiplexer to produce a serial output comprising frequencies which uniquely identify the selected data.

3,680,083

THREE POSITION ELECTROMAGNETIC INDICATOR

George E. Pihl, Abington, Mass., assignor to Miniature Electronic Components Corp., Holbrook, Mass.

Filed Jan. 25, 1971, Ser. No. 109,138
Int. Cl. G08b 5/22, 5/26
U.S. Cl. 340—373 R 18 Claims



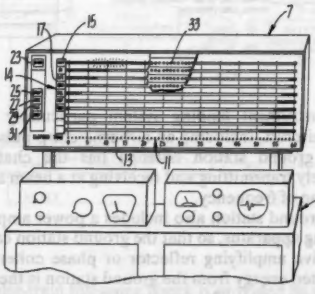
A three-position indicating device including an indicator member having localized magnetic poles and rotatably mounted for positioning in any one of three positions by an electromagnetic structure. The electromagnetic structure essentially comprises (1) a movable pole piece which is adapted to lock the indicator member in an intermediate "center" position or to unlock the indicator member so that it may be moved to either of two limit positions each determined by engagement of said indicator member with said pole piece, and (2) one or two coils for establishing magnetic fields to effect movement of the pole piece to unlock said indicator member and also to effect movement of the indicator member to one or the other of its two limit positions by interaction of said electromagnetic fields with the localized magnetic poles of said indicator member.

3,680,084

STATUS DISPLAY PANEL INDICATING PERFORMANCE AS A FUNCTION OF TIME WITH RECORD FEATURE

Denis Franklin, 510 Hazel Ave, Millbrae, Calif.; Jerald S. Gingold, 136 Merced Drive, San Bruno, Calif.; Ronald B. Oxenham, 89 Perita Drive, Daly City, Calif., and Raymond E. Rogers, 2126 "C" 62nd Ave, Oakland, Calif.

Filed Aug. 3, 1970, Ser. No. 60,323
Int. Cl. G08b 21/00
U.S. Cl. 340—381 6 Claims



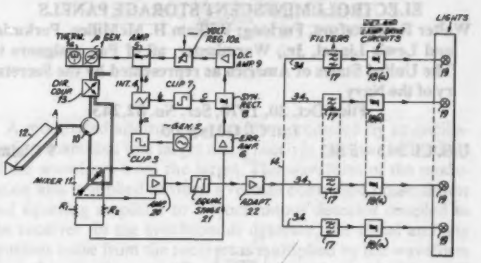
The device of the present invention, termed a resuscigraph, coordinates and organizes systematically the effort of an individual or, more typically, a team of individuals in the performance of a given job involving multiple operations to be done either simultaneously or in a certain sequence as in the case of an attempt to resuscitate a person suffering a cardiac arrest, a common event in nearly every hospital. It is particularly useful in circumstances where the job to be done is of an emergency nature or where limitations of time, lack of personnel for purely coordinating purposes, or other factors, limit verbal intercommunication between team members.

3,680,085

ANTI-COLLISION APPARATUS FOR VEHICLES

Giovanni Del Signore, Via San Matteo in Arcertri 25, Firenze, Italy

Filed Jan. 21, 1970, Ser. No. 4,537
Claims priority, application Italy, Jan. 21, 1969, 4428 A/69; Jan. 16, 1970, 9325 A/70
Int. Cl. G01s 9/24
U.S. Cl. 343—14 5 Claims



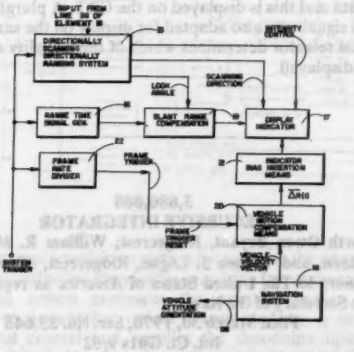
A safety apparatus or anti-collision device to be installed on motor vehicles for detecting and indicating obstacles encountered on a road during conditions of poor or reduced visibility. The apparatus includes wave propagation means to emit a continuous periodically frequency modulated wave with, for example, a triangular pattern. The wave is emitted by an antenna and echo waves reflected by obstacles are received and mixed with a portion of the transmitted wave to obtain a raw signal which is passed through filters to activate one of a plurality of transducers including, for example, light bulbs which are illuminated to indicate the presence and distance of the obstacles. Arrangements are made to limit the number of light bulbs which are illuminated.

3,680,086

GROUND MAPPING RADAR SYSTEM

Jacob E. Valstar, Orange, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Nov. 26, 1969, Ser. No. 880,821
Int. Cl. G01s 9/02
U.S. Cl. 343—5 CM 14 Claims



An azimuthally scanning, directionally ranging system adapted for airborne use in a mapping application. Means

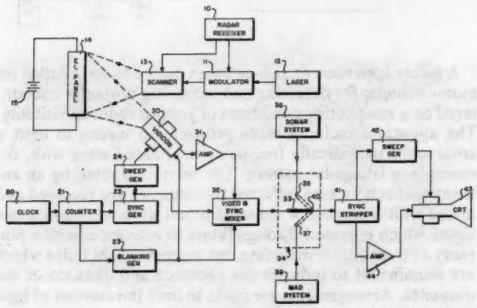
cooperating with an autonavigation system compensates for system platform motion occurring during each azimuthal scan for referencing a mapping display to a preselected position and orientation in a preselected horizon plane. Navigation check point means cooperating with the ranging system determines motion of the system platform relative to a selected target, to allow monitoring of the navigation system and three-dimensional checkpointing.

3,680,087

SCAN CONVERSION THROUGH ELECTROLUMINESCENT STORAGE PANELS

Walter R. Gustafson, Furlong; William H. McMillen, Perkasie, and Lewis Lippel, Jr., Warminster, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 20, 1970, Ser. No. 82,243
Int. Cl. G01s 9/00
U.S. Cl. 343—5 SC **9 Claims**



A system for displaying on a cathode ray tube data contained in modulating signals not compatible with the scan of the cathode ray tube. The modulating signals are first applied to an electro-optic crystal for modulating a laser beam in order to present the information on an electroluminescent storage panel. A vidicon camera having a scan compatible with the CRT senses the information on the electroluminescent panel and provides an electrical signal containing the data and this is displayed on the CRT. A plurality of additional signals are also adapted for display on the same CRT. A manual selector determines which of the plurality of signals is to be displayed.

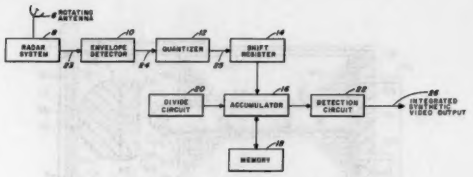
3,680,088

RECURSIVE INTEGRATOR

Kenneth Owen Bryant, Ridgecrest; William R. Morrow, Inyokern, and Vernon J. Logue, Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed March 30, 1970, Ser. No. 23,645
Int. Cl. G01s 9/02
U.S. Cl. 343—5 DP **6 Claims**

An apparatus and method for weighting new and stored radar information. For each hit (or detected noise pulse), a quantizer sends a digital signal to a corresponding storage bin. The information from the current signal and respective previous signals is accumulated, recorded in a memory circuit for



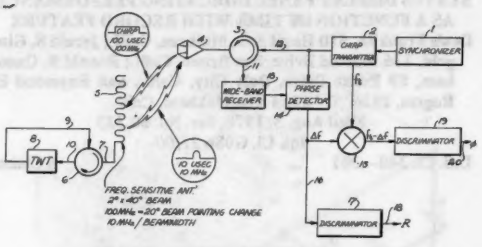
future retrieval and sent to a detection circuit which provides an output. After a predetermined number of hits the accumulation is divided by two, thereby effectively reducing the influence of previous signals while retaining their significance.

3,680,089

AIRCRAFT ELECTRONIC LANDING RESPONSER SYSTEM USING AIRBORNE CHIRP INTERROGATION

Lon L. Sanders, Rolling Hills, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed March 30, 1970, Ser. No. 23,869
Int. Cl. G01s 9/56, 9/23
U.S. Cl. 343—6.5 R **10 Claims**



An instrument landing system particularly adapted for VTOL aircraft, including an airborne chirp pulsed interrogator. A ground station antenna has the characteristic of directively transmitting and receiving at a beam angle which is a function of frequency.

The ground station also includes a power amplifier and RF hybriding apparatus, so that the ground station can perform as a selective amplifying reflector or phase coherent repeater. Reradiated energy from the ground station is then at the same angle as reception. The reradiated frequency is compared with the airborne chirp frequency (as it correlates with ground station antenna beam angle) to obtain an air-derived approach angle.

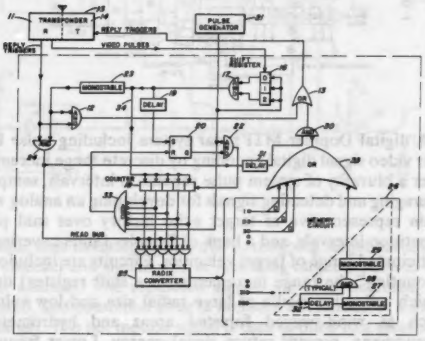
Range is determined in the air by correlating reradiated frequency with chirp frequency as it relates to time delay (round trip transmission time).

The ground antenna beam is relatively broad in the plane orthogonal to the plane of angle measurement.

3,680,090
NON-MAIN BEAM REFLECTED IFF INTERROGATION REJECTOR

Walton B. Bishop, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 27, 1970, Ser. No. 58,321
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 LC 7 Claims

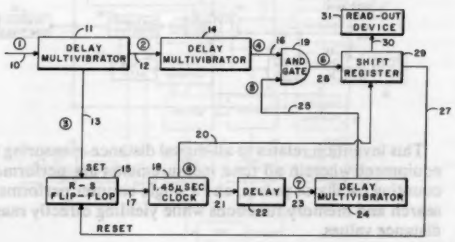


A technique of utilizing the measured time between reception of a sidelobe suppression signal and reflected signals of an IFF interrogation to inhibit further responses to succeeding reflected path interrogations.

3,680,091
PULSE TRAIN FRAMING AND INTERMEDIATE PULSE SPACING ACCURACY TEST CIRCUIT

Kenneth R. Rutherford, Cedar Rapids, Iowa, and Arthur C. Strebe, St. Petersburg, Fla., assignors to Collins Radio Company, Cedar Rapids, Iowa

Filed July 21, 1970, Ser. No. 56,901
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 R 7 Claims

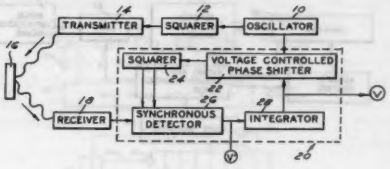


A coded pulse train tolerance check is provided by utilizing the first of a train of input pulses to activate a timing clock pulse source. Pulses in the input train bearing a predetermined time coincidence with the clock pulses are used to set a shift register. The transfer action of the register is also under timing clock control. At the conclusion of a decoding cycle, the code word defined by the input pulse train is stored in the register only if each pulse in the input train is present and in its assigned time-space position with respect to the initial one of the input pulses.

3,680,092
RANGING SYSTEM USING PHASE DETECTION

Gerald C. Scott, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed March 30, 1970, Ser. No. 23,651
Int. Cl. G01s 9/04, 9/46
U.S. Cl. 343—7 A 21 Claims

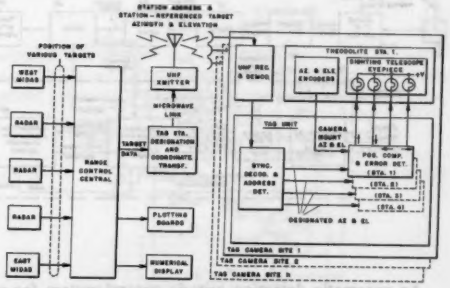


A modulated alternating waveform produced by an oscillator is transmitted to a target and a receiver receives reflections of the waveform from the target. The waveform of the modulation also is applied through a voltage controlled phase shifter and squaring amplifier to a synchronous detector coupled to the receiver. In the synchronous detector, the signal and any spurious noise from the receiver is multiplied by the waveform from the squaring amplifier in a manner that cancels out all spurious noise. A DC voltage representative of the phase shift produced in the modulation of the received signal by the distance from transmitter to target to receiver is applied to an integrator. Integrator output is applied to the voltage controlled phase shifter and is representative of the distance traveled by the waveform.

3,680,093
DIGITAL TARGET ACQUISITION SYSTEM

Claude W. Brown, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 11, 1970, Ser. No. 10,542
Int. Cl. G01s 9/02
U.S. Cl. 343—7 ED 9 Claims

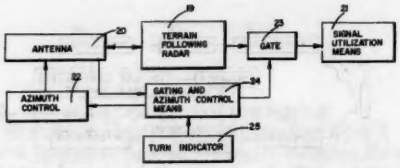


A digital target acquisition system for assisting the operators of manually controlled theodolites acquiring fast maneuvering targets. The system compares the pointing angles of a theodolite to acquisition orders transmitted by a remote range-control central and supplies the theodolite operator with visual error indications that will enable him to train his camera on the designated target. The system is capable of simultaneously assisting the operators of up to four theodolites in acquiring four different targets.

3,680,094
TERRAIN-WARNING RADAR SYSTEM

Guy P. Bayle, Orange, and Douglas A. Johnson, Garden Grove, both of Calif., assignors to North American Aviation, Inc.

Filed April 4, 1966, Ser. No. 540,053
Int. Cl. G01s 9/02
U.S. Cl. 343—7 TA 8 Claims

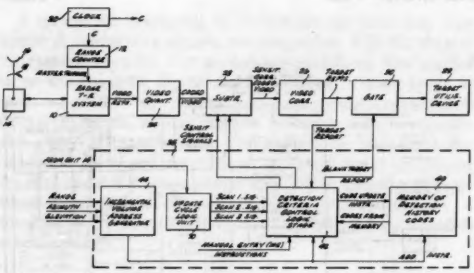


In a directionally-ranging device adapted for airborne use as a terrain-following system, means for limiting or modifying the effective field of view of the system during a lateral or turning maneuver of a utilizing vehicle, to view that terrain about the predicted flight path associated with such maneuver. The azimuth direction angle of the directivity of the directionally-ranging device is varied from a forward direction toward the direction of the turn maneuver, while range-gating means blanks-out signals received from terrain lying in such maneuver direction and beyond the predicted flight path, whereby the utility of such terrain following system during lateral maneuvering is improved.

3,680,095
AUTOMATIC DETECTION CRITERIA CONTROL UNIT FOR PENCIL BEAM RADARS

Norol T. Evans, San Pedro, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed April 17, 1967, Ser. No. 631,307
Int. Cl. G01s 9/02
U.S. Cl. 343—7 A 20 Claims

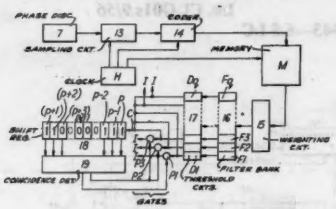


An automatic detection criteria control system for pencil beam radar in which video returns are coded and correlated to provide target reports. The amplitude of the coded returns from each range bin is subject to modification as a function of the history of target detection in an incremental volume of space which includes the particular range bin. The system includes a memory in which a target-detection-history indicating code is stored for each incremental volume. The code is read out, in real time, with the video returns from all range bins of a given incremental volume. The codes are updated during a sequence of update cycles to indicate the latest history of target detection in each incremental volume.

3,680,096
CIRCUITS ELIMINATING LARGE CLUTTER ECHOES

Henri J. Bosc, Paris, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 28, 1970, Ser. No. 41,524
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 4 Claims

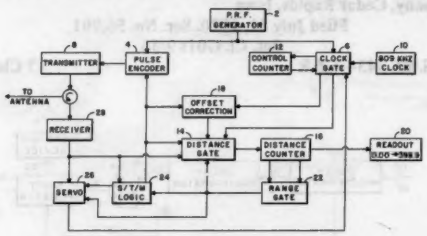


A digital Doppler MTI radar system including pulse Doppler video signal digital encoding by discrete range increments over a plurality of system pulse repetition intervals, sampling, averaging and detecting signals for developing an analog video train representative of target echo history over said plural repetition intervals, and a bank of Doppler filters covering the anticipated range of target velocities. Circuits are included for "counting" the range increments (in a shift register) during which reflective media of large radial size and low velocity, such as wind-swayed forested areas and hydrometeoric phenomena, present return signal energy. Lower frequency Doppler channels are disabled during the time of reception of echoes from said media, eliminating this source of clutter without also eliminating higher velocity echo reception.

3,680,097
ALL DIGITAL DISTANCE MEASURING EQUIPMENT

Dean P. Huntsinger, Marion, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Oct. 28, 1969, Ser. No. 870,026
Int. Cl. G01s 9/14
U.S. Cl. 343—7.3 10 Claims



This invention relates to all-digital distance-measuring radio equipment wherein all time measurements are performed by counting oscillator pulses, and a single counter performs both search and memory functions while yielding directly readable distance values.

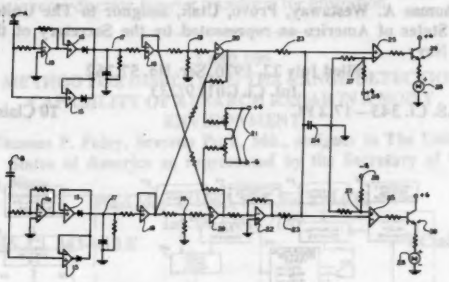
3,680,098
LARGE DYNAMIC RANGE COHERENT RADAR PROCESSOR

Paul E. Harris, and George E. Mader, both of Syracuse, N.Y., assignors to Syracuse University Research Corporation, Syracuse, N.Y.

Filed Nov. 4, 1970, Ser. No. 86,906
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 5 Claims

A processor for a coherent radar detecting direction of motion can distinguish between targets which oscillate from those

having net motion and uses a radar which splits the received signals into two equal parts containing doppler components, shifting one part by 90°. The invention is embodied in the processor whose inputs are these doppler components, usually audio or subaudio frequency signals. The processor shifts the relative phase of the doppler components an additional 90° and combines the shifted components in sum and difference



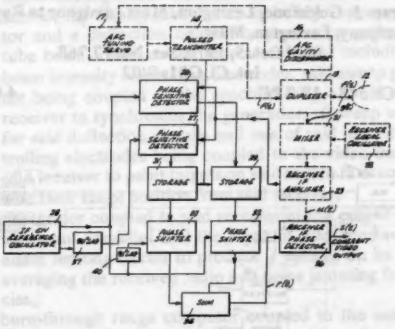
circuits, thus isolating signals due to outgoing target motion in one channel and signals due to incoming target motion in the other channel. The separated signals are then detected, integrated, and combined so as to measure net motion of a moving target. The net motion signal is then applied to a threshold detector whose output indicates an alarm. Unity gain circuitry is used, avoiding automatic gain control whose adaptation time is sometimes prohibitively long.

3,680,099

NON-COHERENT RADAR SYSTEM WITH MEANS TO CORRECT THE PHASE OF THE RETURN SIGNAL

Elvin E. Herman, and Henry L. McCord, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed June 21, 1965, Ser. No. 465,793
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **9 Claims**



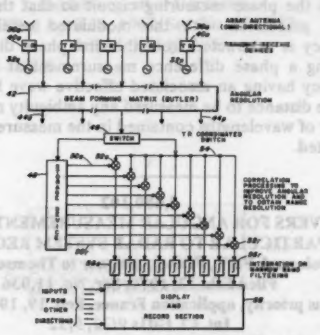
A pulsed radar including a phase detector connected to detect rf phase variations between transmitted pulses and a stable clock signal for generating an error signal which is fed to a phase shifter which, in turn, is connected in circuit between the radar receiver and a *c–w* reference signal generator for shifting the phase of the echo signal relative to the *c–w* reference signal for removing the relative phase variation between the echo signal and the c-w reference signal resulting from random starting phase variation in the transmitted signals.

3,680,100

RANDOMLY PHASE CODED ANTENNA TECHNIQUE FOR SEARCH RADAR

Hermann H. Woerrlein, Dunkirk, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 15, 1970, Ser. No. 98,248
Int. Cl. G01s 9/06
U.S. Cl. 343—11 R **11 Claims**



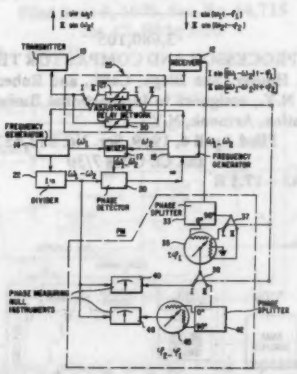
A search radar having an array antenna wherein the individual antenna array elements are energized by random phases having a beam forming matrix to sense direction dependent phase codes in the antenna far field, which phase codes are in turn used in correlation processing in the radar receiver for the purpose of obtaining angular resolution and radar sensitivity.

3,680,101

DISTANCE MEASURING DEVICE

Carl-Erik Granqvist, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed Aug. 10, 1970, Ser. No. 62,548
Claims priority, application Sweden, Aug. 11, 1969, 11120/69
Int. Cl. G01s 9/24
U.S. Cl. 343—14 **8 Claims**



A distance measuring device wherein the phase difference between a transmitted signal and the received reflection thereof is used to determine the distance the received signal has traversed. The device generates a pair of electromagnetic waves at two accurately known frequencies. The first frequency wave is transmitted and the other frequency wave is used to

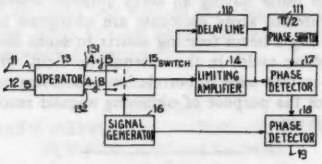
modulate the received reflected wave in the receiver to produce a difference frequency. A phase measuring circuit compares the phase of this difference frequency to the phase of a signal of the same difference frequency that has been generated locally within the device. To resolve the ambiguity in the resulting phase difference measurement obtained, a switching means is provided to reverse the roles of the generated waves by connecting the second frequency wave to the transmitter and connecting the first frequency wave to the modulatable receiver. This same switching means also changes the phase measuring circuit so that the phase difference associated with the modulated received second frequency is subtracted from the first phase difference. By providing a phase difference measurement at a difference frequency having an associated effective wave length larger than the distance to be measured any ambiguity regarding the number of wavelengths contained in the measured distance is eliminated.

3,680,102

RECEIVERS FOR ANGULAR MEASUREMENT SYSTEMS, IN PARTICULAR TO RADAR SYSTEM RECEIVERS

Henri Poinsard, Paris, France, assignor to Thomson-CSF

Filed Feb. 12, 1970, Ser. No. 11,036
Claims priority, application France, Feb. 19, 1969, 6904134
Int. Cl. G01s *9/22, 9/52*
U.S. Cl. 343—16 M **9 Claims**



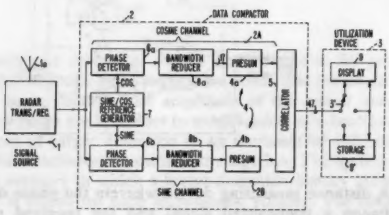
In a receiver of an angular measurement system of the type in which an angular indication is given by the ratio of two simultaneously received signals A and B, the useful signal is obtained through alternately phase detecting signals A + jB and A − jB with either signal A or alternately signals A − jB and A + jB, and alternately inverting the sign of the phase detection signal thus obtained. Distortions due to amplification are thus avoided.

3,680,103

DATA PROCESSOR AND COMPACTOR THEREFOR

George G. Houser, San Diego, Calif., and Robert E. Jenkins, Owego, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed April 4, 1969, Ser. No. 813,453
Int. Cl. G01s *7/30*
U.S. Cl. 343—17.1 R **26 Claims**



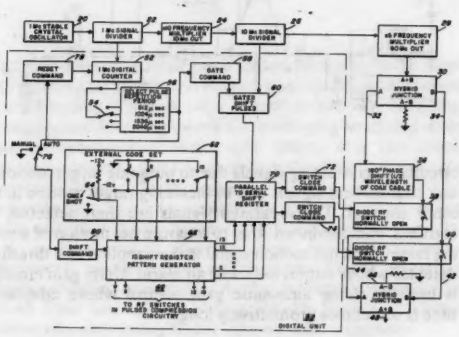
A data processing system and compaction means therefor sums groups of incoming data signals and provides a composite data signal for each group of signals summed. The composite signals are correlated in a predetermined sequence and provide correlated output signals indicative of the information contained in the plural data signals.

3,680,104

PHASE REVERSAL PULSE MODULATOR AND PULSE COMPRESSION FILTER FOR A COHERENT RADAR

Thomas A. Westaway, Provo, Utah, assignor to The United States of America as represented by the Secretary of the Navy

Filed July 22, 1970, Ser. No. 57,262
Int. Cl. G01s *9/233*
U.S. Cl. 343—17.2 PC **10 Claims**



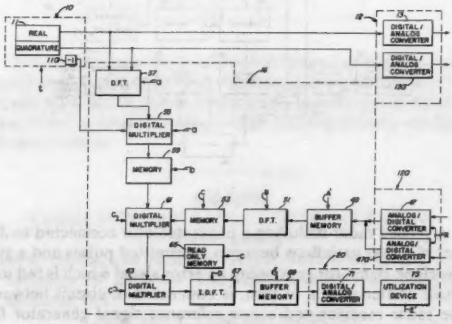
A coherent, 13 bit phase reversal pulse modulator and pulse compression filter for increasing the range resolution of a coherent radar. The transmitted pulse is subdivided into equal duration bits, and as the pulse is being formed each bit may or may not be shifted in phase determined by a digital code generator. The range resolution of which this pulse reversal modulated pulse is capable is achieved by processing the radar return signal in an approximation to a matched filter.

3,680,105

PULSE COMPRESSION RADAR SYSTEM

Bertram J. Goldstone, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 5, 1970, Ser. No. 77,768
Int. Cl. G01s *9/02*
U.S. Cl. 343—17.2 PC **4 Claims**



A pulse compression radar system wherein a coding signal indicative of the modulation to be impressed on a transmitted signal is read out of a read only memory and converted to: (a) an analog modulation signal impressed on a radio frequency

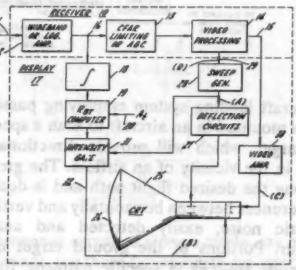
carrier; and (b) the complex conjugate of the discrete Fourier transform of the coding signal stored in a memory. Each echo signal resulting from illumination of a different target by the modulated transmitted signal is converted to a corresponding digital form indicative of the modulation on each such echo signal, transformed in a discrete Fourier transform and correlated with the stored complex conjugate of the coding signal for the transmitted signal. The resulting correlation signal is weighted and then converted back to a time varying signal in an inverse discrete Fourier transform for utilization.

3,680,106

METHOD FOR DISPLAYING THE RANGE DETECTION CAPABILITY OF A SEARCH RADAR IN A NOISY ENVIRONMENT

Thomas P. Foley, Severna Park, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 7, 1963, Ser. No. 279,044
Int. Cl. G01s 7/36
U.S. Cl. 343—18 E **7 Claims**



A means of displaying the range detection capability of a search radar in a noisy environment comprising:

a constant false alarm radar receiver for receiving echo radio frequency signals reflected from targets and subject to broadband noise jamming, said receiver having a wideband amplifier of radio frequency and a constant false alarm limiting circuit therein;

a cathode ray display tube circuit including a sweep generator and a deflection circuit for producing cathode ray tube beam traces on the tube screen, and including two beam intensity controlling electrodes, said sweep generator being coupled to the synchronizing circuits of said receiver to synchronize the generation of sweep voltages for said deflection circuits and one of said intensity controlling electrodes being coupled to the video output of said receiver to paint targets on said screen in accordance with their range position from said receiver;

an integrator coupled to said receiver at the output of said wideband amplifier and the input of said constant false alarm limiting circuit to produce a voltage on its output averaging the received radio and noise jamming frequencies;

a burn-through range computer coupled to the output of said integrator and having an adjustable voltage input representative of target size, said computer producing a voltage representative of the burn-through range on an output thereof; and

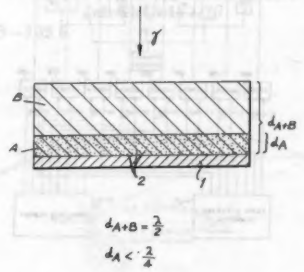
an intensity gating means coupled to the output of said range computer and to the sweep generator to gate the burnthrough range voltage on an output thereof proportional to noise jamming frequency with respect to adjusted voltage representative of target size, said intensity gating means output being coupled to the other beam intensity controlling electrode of said cathode ray display tube to light intensity with said burnthrough range voltage the range areas on said tube screen being jammed whereby operators of the radar may control the display of target information as a function of anticipated target size to eliminate false target display.

3,680,107

WIDE BAND INTERFERENCE ABSORBER AND TECHNIQUE FOR ELECTROMAGNETIC RADIATION

Hans H. Meinke, Arorstrasse 21, Munich; Kurt Ullrich, Elchingerweg 6, II, Ulm-Boflingen, and Ludwig Wesch, Gaisbergstr 2, Heidelberg, all of Germany

Filed April 11, 1967, Ser. No. 634,020
Int. Cl. H01q 17/00
U.S. Cl. 343—18 A **8 Claims**



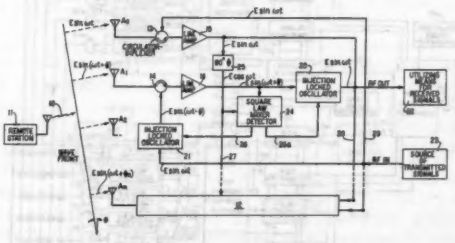
A multiple-stage interference-type absorber for extinguishing a wide band of high-frequency electromagnetic waves by interference. The absorber includes a reflecting base layer on which are superposed at least two further layers having in combination a total thickness of about $\lambda/2$ wherein λ is the average wavelength in the frequency band to be extinguished. One of the superposed layers is adjacent the base layer and consists of an embedding material in which fillers are embedded to impart to the material an increased relative magnetic permeability. This layer has a thickness which is less than $\lambda/4$. The other layer is of a loss-free material.

3,680,108

SELF-STEERING ARRAY REPEATER

Thomas Lawrence Osborne, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

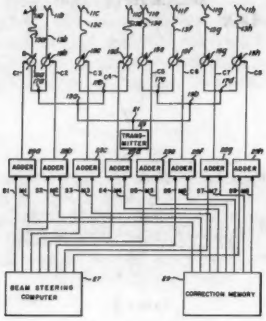
Filed June 9, 1970, Ser. No. 44,715
Int. Cl. H01q 3/26
U.S. Cl. 343—100 TD **11 Claims**



A self-steering phased antenna array repeater system in which signals from a distant source at two spaced receptors are relatively shifted in phase and combined in a square law mixer. The output mixer current is a function of their phase difference and indicates the direction in which the signals arrive. This current is used to bring the phase of received signals together for combining and to introduce the same phase difference but of opposite sign for re-radiation by applying the

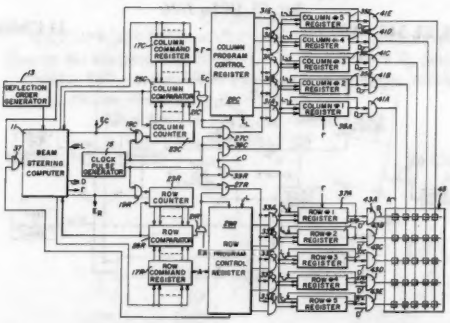
current as the control for at least one injection locked oscillator which produces a phase shift according to the same function as the mixer output.

3,680,109
PHASED ARRAY
Fritz Steudel, Sudbury, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Aug. 20, 1970, Ser. No. 65,460
Int. Cl. H01q 3/26
U.S. Cl. 343—100 SA **3 Claims**



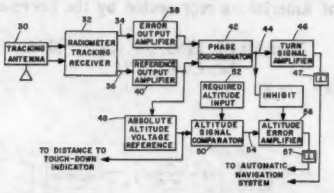
A corporate feed phased array for radio frequency energy, such array being adapted to frequency angle phase shifter scanning. The electrical length of each transmission line leading to each radiating element is randomly selected to permit the digital phase shifter associated with each radiating element to be randomly actuated to produce a collimated and deflected beam.

3,680,110
ANALOG FERRITE PHASE SHIFTER CONTROL CIRCUIT
Bertram J. Goldstone, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Oct. 14, 1970, Ser. No. 80,706
Int. Cl. H01q 3/26
U.S. Cl. 343—100 SA **1 Claim**



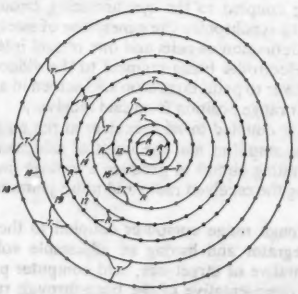
A control circuit for analog ferrite phase shifters in an antenna array wherein such phase shifters are arranged in rows and columns. The circuit includes a recirculating shift register for each row, each such register repetitively producing a "start" current flow signal for the phase shifters in each row and a recirculating shift register for each column, each such register repetitively producing a "stop" current flow signal for the phase shifters in each column. The various recirculating shift registers are programmed so that the time between the "start" and the "stop" current flow signal to each one of the phase shifters results in the proper average current to accomplish collimation and deflection of the beam from the antenna array.

3,680,111
RADIOMETRIC AIRCRAFT LANDING SYSTEM
Derling G. Killion, and Frank J. Janza, both of San Diego, Calif., assignors to Teledyne Ryan Aeronautical Company, San Diego, Calif.
Filed Oct. 12, 1970, Ser. No. 79,894
Int. Cl. G01w 1/00
U.S. Cl. 343—100 ME **10 Claims**



An aircraft landing system employing passive radiometer apparatus mounted in an aircraft to scan a specially arranged ground target, which will provide directional and altitude guidance in the vicinity of an airfield. The ground target extends along the desired flight path and is designed to cause large differences between horizontally and vertically polarized radiometric noise, easily detected and analyzed by the radiometer. Portions of the ground target may have augmented noise sources in specific patterns, for marking and identification purposes. The radiometer output can provide visual or audible aid to manual control, or be used to operate an automatic pilot, or the like.

3,680,112
REDIRECTIVE DUAL ARRAY ANTENNA
Richard K. Thomas, Wayne, Pa., assignor to General Electric Company
Filed July 28, 1969, Ser. No. 845,198
Int. Cl. H01q 3/26
U.S. Cl. 343—100 TD **1 Claim**



Two circularly symmetrical concentric phase-steerable antenna arrays, scaled 3/2 in proportion to the wavelength at which each is designed to operate, have homologous radiators arranged in rings symmetrical about the common center. The radii of successive rings in a given array are 2.5, 4.75, and 5.75 times the radius of the innermost ring; the angular spacing of the radiators in each ring, beginning with the innermost, is 72°;

24°; 12.4°; and 10.28°. Each receiving radiator is tied to its homologous transmitting radiator through a network which corrects the phase of the received information band by reference to a receiving phase signal transmitted from the transmitting station, then further corrects the phase of the thus corrected information band by reference to a transmitting phase signal transmitted from the receiving station, and converts the thus doubly corrected information band to the transmitting frequency. As a result of the double phase correction, the frequency-converted information band is phase-steered to the receiving station.

3,680,113

ANTENNA SYSTEM FOR SATELLITES

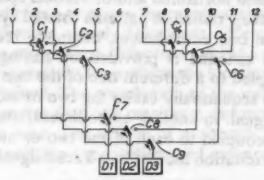
Bernard Louis Marcel Dorier, La Celle Saint-Cloud, and Denis Jacques Laedlein, Villennes-Sur-Seine, both of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, Paris, France

Filed Oct. 14, 1969, Ser. No. 866,342

Claims priority, application France, Oct. 15, 1968, 68170016

Int. Cl. H01q *3/26*

U.S. Cl. 343—100 SA **7 Claims**



In a set of *n* antennas arranged along a circle, say on a satellite, only *m* antennas, say those facing Earth are operative at a time and are switched in as they pass into the operative area. The radiating lobes are constrained to be directed permanently towards a substantially unvarying area and the phase-shifting required is obtained by means of digital phase-shifters which operate stepwise, so as to make up for variations of the length of the path between an antenna as it revolves and Earth.

3,680,114

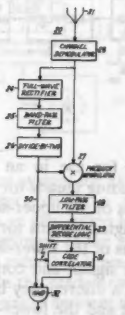
MODULATION FORMAT FOR SIGNAL ARRIVE TIME DETERMINATION UTILIZING DIFFERENTIAL CODE LOGIC

James R. Whitten, Scotia, N.Y., assignor to General Electric Company

Filed Dec. 8, 1969, Ser. No. 882,987

Int. Cl. H04b *7/00*

U.S. Cl. 343—100 CL **7 Claims**



A method of modulating a signal is disclosed wherein ancillary information is encoded on a sub-carrier so that the information and the time of arrival of the signal may be simultaneously determined. When the ancillary information is an identification code, the technique may be used in timing, vehicle location, navigation systems, and the like. In a receiving station, a portion of the signal is detected and used to demodulate the remainder of the signal which is then code filtered and correlated with the detected signal to obtain arrival time.

3,680,115

VERY LOW FREQUENCY LOCATION FINDING SYSTEM

John E. Bickel; Clemens H. Freres, both of San Diego; Earl E. Gossard, Delmar; James E. Britt, San Diego; Norman R. Ortwein, San Diego, and Eric R. Swanson, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed April 29, 1969, Ser. No. 823,239

Int. Cl. G01s *1/30*

U.S. Cl. 343—105 R **4 Claims**

To display at a command post the positions of all vehicles in a tactical area, each vehicle receives two very low frequencies (VLF's) of an "Omega" system, and retransmits the phase information thereof by a high frequency link to the command post where a general purpose computer determines the direction and the distance to each remote vehicle.

3,680,116

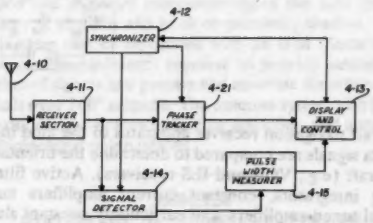
METHOD AND APPARATUS FOR SIGNAL DETECTION

Paul Rademacher, Glen Head, and Burton L. Hulland, Glenwood Landing, both of N.Y., assignors to Dynell Electronics Corporation, Melville, N.Y.

Filed May 7, 1970, Ser. No. 35,468

Int. Cl. G01s *1/30*

U.S. Cl. 343—105 **17 Claims**

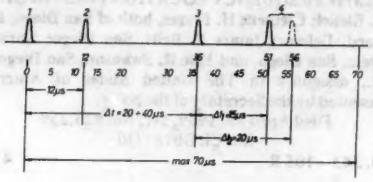


A visual display is provided by juxtaposing indications of locally generated signals with indications of corresponding received signals. The locally generated signals and the received signals are synchronized by observation of the display and adjustment of the phase of the local signals.

3,680,117
TACAN METHOD

Klaus-Dieter Eckert, Ludwigsburg, and Hans-Joachim Roper, Kornwestheim, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 17, 1970, Ser. No. 47,067
Int. Cl. G01s 1/46
U.S. Cl. 343—106 R 7 Claims

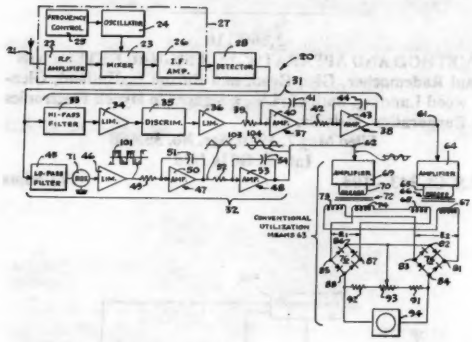


An antenna system arranged at the end of the runway radiates Tacan pulses, and an antenna system arranged beside the runway radiates additional information in the form of pulses having specific time relationships with the Tacan pulse-pair. The additional information is evaluated by means of a Tacan receiver whose video stage is followed by a decoder for the additional information.

3,680,118
AIRCRAFT NAVIGATION RECEIVER APPARATUS USING ACTIVE FILTERS

Myron L. Anthony, La Grange, Ill., assignor to Statistical Services, Inc., Chicago, Ill., a part interest

Continuation-in-part of Ser. No. 713,786, March 18, 1968, abandoned. This application July 14, 1970, Ser. No. 54,778
Int. Cl. G01s 1/44
U.S. Cl. 343—106 R 25 Claims

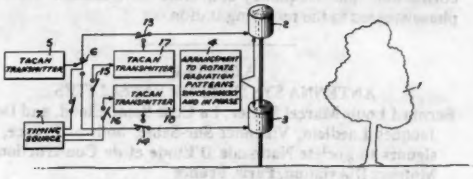


Aircraft navigation receiver apparatus of the kind in which two data signals are compared to determine the orientation of an aircraft (e.g., VOR and ILS receivers). Active filters, including integrators, constant current amplifiers and differential tuned amplifiers, and particularly constant slew rate filters, eliminate extraneous frequencies from the data signals without the phase distortion and other errors of passive filter circuits. A limiter circuit is preferably interposed in the receiver apparatus ahead of any of the filtering means. A phase detector that is inherently immune to amplitude variations is provided. For VOR receivers, a phase discriminator that is inherently immune to amplitude modulation distortion is presented. An AGS circuit for the receiver apparatus, which operates substantially independently of any amplitude modulation in the received signal, is provided.

3,680,119
TACAN ANTENNA SYSTEM

Sven H. Dodington, Mountain Lakes, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 14, 1970, Ser. No. 63,877
Int. Cl. G01s 1/46
U.S. Cl. 343—106 R 10 Claims

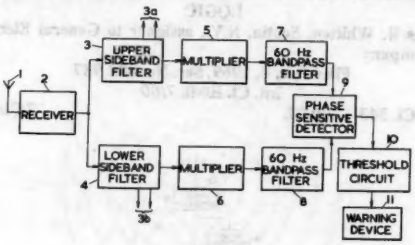


The nulls and lobes of a Tacan antenna horizontal and/or vertical radiation patterns due to unwanted reflections are reduced by employing two or more Tacan antennas disposed in a predetermined horizontal and/or vertical spaced relation having each of their radiation patterns rotated synchronously and in phase. In one embodiment, complete redundancy of transmitter and antenna is provided by having a different transmitter coupled to a different one of the two or more antennas timed to sequentially excite the two or more antennas with a Tacan signal. In another embodiment, one transmitter is sequentially coupled to each of the two or more antennas for sequential excitation thereof by a Tacan signal.

3,680,120
AIRCRAFT LANDING RADIO GUIDANCE RECEIVER WHICH WARNS OF SIGNAL REFLECTIONS

John Benjamin, Farnborough, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 8, 1970, Ser. No. 35,870
Claims priority, application Great Britain, May 9, 1969, 23,734/69
Int. Cl. G01s 1/14
U.S. Cl. 343—109 2 Claims

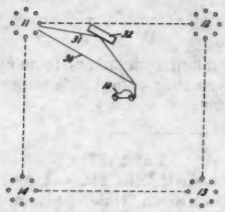


Receiver apparatus for use in an aircraft landing radio guidance system, including means for deriving beat frequencies from combinations of the upper-sideband components of a received guidance signal, means for deriving beat frequencies from combinations of the lower-sideband components of the received guidance signal, and comparison means for detecting and indicating a discrepancy between the upper-sideband beat-frequencies and the lower-sideband beat-frequencies. The apparatus may comprise sideband filter circuits, two mixer circuits, a phase-sensitive detector and a threshold circuit.

3,680,121
MOBILE LOCATOR SYSTEM FOR METROPOLITAN AREAS

Roy E. Anderson, Schenectady, N.Y., and Miguel A. Merigo, Lynchburg, Va., assignors to General Electric Company

Filed Jan. 2, 1970, Ser. No. 361
Int. Cl. G01s 5/02
U.S. Cl. 343—112 TC 11 Claims

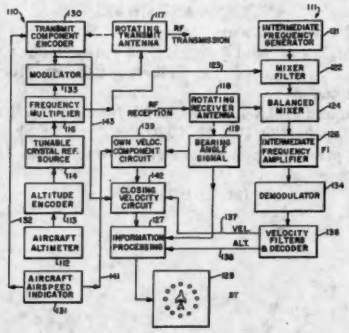


A locator system is disclosed wherein the vehicle whose location is unknown transmits a short, modulated radio frequency pulse. Receiving stations about the periphery of the area being serviced phase compare the received signal with a standard time reference signal. The phase difference is used to determine the arrival time differences at the known locations of the receiving stations from which the location of the vehicle may be determined. The wavelength of the modulating signal is generally greater than the maximum distance encountered in the service area. The effects of multipath reflections are minimized by utilizing a space dispersed antenna.

3,680,122
PILOT WARNING INDICATOR SYSTEM UTILIZING A TRANSMISSION OF SIGNALS WITHIN THE ABSORPTION BAND OF THE OXYGEN SPECTRUM

Walton Graham, Roslyn, and Robert R. Keegan, Scarsdale, both of N.Y., assignors to Control Data Corporation, Minneapolis, Minn.

Filed March 13, 1970, Ser. No. 19,246
Int. Cl. G01s 1/12
U.S. Cl. 343—112 CA 20 Claims

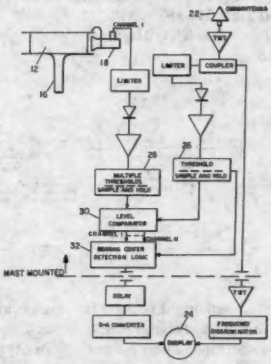


A proximity indicator system for aircraft which includes a radio signal transmitter having a predetermined output frequency range within an absorption band of the spectrum of a major invariable constituent of the atmosphere. A transmit antenna, which may be rotatable, is employed to propagate an output frequency within the predetermined range which may be responsive to variations in ambient atmosphere density and hence altitude. A rotatable antenna is connected to a radio receiver which has a predetermined amplitude threshold receiving level and is attuned to at least a portion of the output frequency range. A display is connected to the receiver to indicate reception of a signal and, optionally its direction. The output signal may be monitored by a receiver which contains a modulating circuit to compare a received signal with the monitored signal, the resultant being representative of any altitude differential which may exist between the respective signal sources. Resultants which represent more than a predetermined maximum differential will be rejected. A rotatable transmit antenna may supply bearing information regarding the output signal to a modulating circuit simultaneously with a signal representing air speed, whereby the output signal is impressed with a bearing velocity component. The output signal is monitored and compared with a similarly encoded received signal to reject information derived from a receding source (or other sources not representing a near term collision threat).

3,680,123
LUNEBERG LENS ECM APPARATUS

Marion B. Bryant, and Barry R. Hunt, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 9, 1970, Ser. No. 79,592
Int. Cl. G01s 3/18
U.S. Cl. 343—113 R 6 Claims



A Luneberg lens antenna system for ECM applications. A cylindrical Luneberg lens of suitable dimensions is rigidly mounted between a pair of juxtaposed, parallel conducting plates. A selectively predetermined number of feed-horns are mounted and disposed independently of the lens about the periphery of the lens and in close proximity thereto. The antenna system can be combined with an IFM (Instantaneous Frequency Measurement) receiver to provide instantaneous reception of signals and precise and accurate direction-finding of signals over 360° azimuth. The antenna system also features high-gain, narrow beamwidths, low sidelobes, and acceptance of multiple signal polarizations.

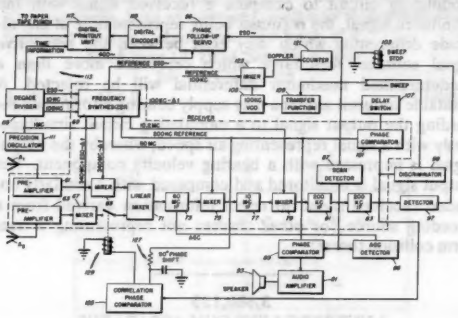
3,680,124
SYSTEM FOR DETERMINING AZIMUTH

Albert M. Stone, and Edwin E. Westerfield, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 11, 1964, Ser. No. 367,899
Int. Cl. G01s 3/48
U.S. Cl. 343—113 R 20 Claims

The invention provides a system employing a radio interferometer, in conjunction with a satellite whose orbit is precisely known, for determining the azimuth of a receiving

station receiving a signal from said satellite by computing the relative phase difference of the signal from said satellite as it



appears at each of two spaced antennas at said receiving station.

3,680,125

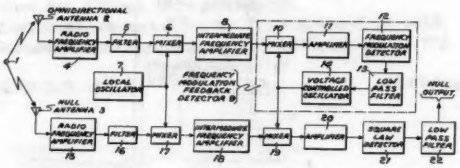
ANGULAR MODULATION DIRECTION FINDING RECEIVER

Bernard Cooper, Fair Lawn, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed June 16, 1970, Ser. No. 46,680

Int. Cl. G01s 3/40

U.S. Cl. 343—115 **7 Claims**



An improved null-sensing direction finding receiver responsive to an angle modulated signal is disclosed. The receiver includes an omnidirectional antenna and a directional null antenna. The omnidirectional antenna output signal is down converted to encompass the modulated frequency spectrum and in turn is fed to a FMFB detector where the VCO therein closely follows the angle modulated signal. The null antenna output signal is down converted, as in the case of the omnidirectional antenna output signal and then is subjected to a second frequency conversion employing the output signal of the VCO of the FMFB detector as the local oscillator signal for the second frequency conversion. This results in an improved null-sensitivity in the order of the modulation index, since the null accuracy is a direct function of signal-to-noise ratio. A square law detector and low pass filter after the second frequency conversion provides a null detection process insensitive to random phase fluctuations of the input signals.

3,680,126

SELF-PROGRAMMING ANTENNA TRACKING SYSTEM

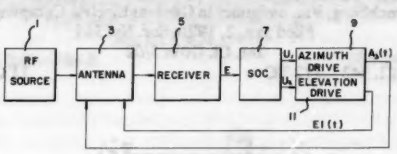
Roger L. Barron, Burke; Kenneth S. Kelleher, Alexandria, and George C. Vieth, Jr., Springfield, all of Va., assignors to Adaptronics, Inc., McLean, Va.

Filed Aug. 18, 1969, Ser. No. 850,996

Int. Cl. G01s 3/42

U.S. Cl. 343—117 R **10 Claims**

The disclosure relates to a self-programming antenna tracking system having a single channel between the antenna system and the control system, the antenna system being capable of providing a single output signal which is indicative of tracking error and the control system comprising a self-organizing controller capable of providing multiple actuator



control signals to multiple actuators to minimize tracking error based upon evaluation of the single error signal provided along the single channel.

3,680,127

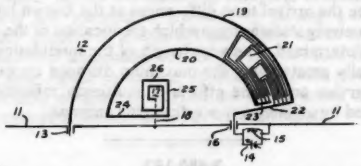
TUNABLE OMNIDIRECTIONAL ANTENNA

David J. Richard, Fairborn, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed April 7, 1971, Ser. No. 132,016

Int. Cl. H01q 9/00

U.S. Cl. 343—708 **5 Claims**



Two loaded, concentric, semicircular, radiating members provide a physically planar omnidirectional antenna having a relatively uniform nominal impedance and a tunable operation over approximately a 3:1 bandwidth with a protrusion above the ground plane of less than one-tenth wavelength at the high frequency end of the operating bandwidth.

3,680,128

RECEIVER WITH INPUT PHASE CONTROL BETWEEN ANTENNA AND CHASSIS

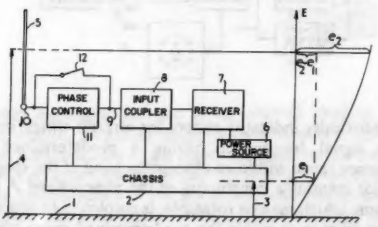
Edward N. Wille, Locust Valley, and Walter K. Volkers, deceased, late of Sand Point, L.I., N.Y. (by Daphne Volkers, executrix), assignors to Volkers Research Inc., Port Washington, N.Y.

Continuation of Ser. No. 648,298, June 23, 1967. This application Oct. 20, 1970, Ser. No. 82,524

Claims priority, application Great Britain, June 23, 1966, 28,117/66

Int. Cl. H01q 1/24

U.S. Cl. 343—702 **4 Claims**



A receiver system including a differential input of which one end is connected to the antenna and the other end is grounded to the receiver chassis and a phase control device

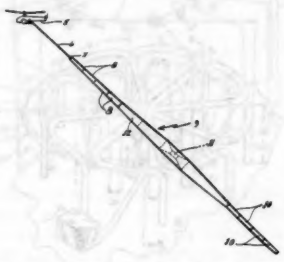
for adjusting the phase relationship between the antenna signal and the parasitic signal extracted from space by the receiver chassis.

3,680,129

AIRCRAFT TOWED INFLATABLE ANTENNA

John H. Darrah, Albuquerque, N. Mex.; James C. Bell, Uniontown, Ohio; Jerome J. Vorachek, Barberton, Ohio; John W. Bezbatchenko, Akron, Ohio; George A. Biecker, Akron, Ohio; James A. Barton, Uniontown, Ohio; Robert C. Gordon, Cuyahoga Falls, Ohio, and Gerald D. Kirschner, Akron, Ohio, assignors to The United States of America as represented by the Secretary of Air Force

Filed April 29, 1971, Ser. No. 138,424
Int. Cl. H01q 1/28
U.S. Cl. 343—706 6 Claims



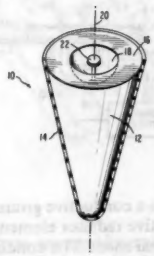
The invention comprehends a towed airborne electromagnetic radiating pulse antenna simulator. The antenna simulates the rf energy spectrum of radiation emitted from a nuclear detonation. It consists of a helium inflated centerbody to which are appended two trailing wire cages, the whole of which is towed by either an aircraft or helicopter. The inflated semi-rigid centerbody has extended lengths of wire cages which extend the effective antenna length. Electrical performance is enhanced by means of continuous resistive surfaces and lumped resistance elements located between cage segments.

3,680,130

RE-ENTRY VEHICLE NOSE CONE WITH ANTENNA

Howard S. Jones, Jr., Washington, D.C.; Joseph J. Witte, Silver Spring, Md., and Harry K. Morlock, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army

Filed Nov. 12, 1969, Ser. No. 875,879
Int. Cl. H01q 1/28, 13/10, 13/18
U.S. Cl. 343—708 4 Claims



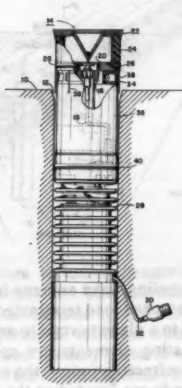
Disclosed is a re-entry vehicle in the form of a nose cone body having an electrically conductive outer surface free of discontinuities and incorporating an antenna for exciting the body. The antenna is adjacent the vehicle base where the plasma layer during re-entry is a minimum. The antenna is disclosed as recessed into the base surface of the body.

3,680,131

LOW PROFILE ANTENNA MOUNTED ON A WATERCRAFT

Roger D. Hall, Encino, and David N. Clasby, Newhall, both of Calif., assignors to The Bendix Corporation

Filed Nov. 16, 1970, Ser. No. 89,913
Int. Cl. H01q 1/34
U.S. Cl. 343—710 12 Claims



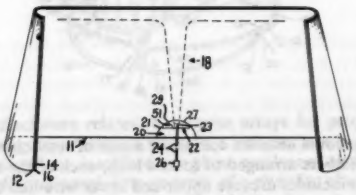
An omnidirectional, ultra high frequency transmitting antenna is disclosed having an unusually low profile and being of unusually rugged physical construction. A cylindrical monopole is attached to the outside conductor of a coaxial cable, and the center conductor is fastened to the apex of a conical dipole, with mechanical spacing and support between the dipoles being supplied by means of a ring of low loss dielectric material which provides dielectric loading for the antenna. With the dielectric loading, the height of the antenna can be made appreciably less than in the case of a conventional dipole antenna. A light flasher is incorporated into the cylindrical monopole as an aid in visually locating the antenna and associated equipment.

3,680,132

ANTENNA WINDSHIELD

Richard J. Tolliver, Greensburg, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 15, 1970, Ser. No. 46,305
Int. Cl. H01q 1/32
U.S. Cl. 343—713 3 Claims



An improved antenna for a laminated windshield comprising a single continuous antenna wire mounted in a plastic interlayer and having its central portion forming a loop in spaced relation to the windshield edge to receive a single

solder connection to a metal tab electrically connected to a radio receiver.

3,680,133

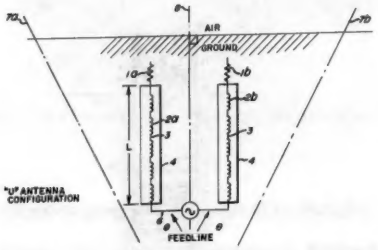
SUBSURFACE TRAVELING WAVE ANTENNA

Carson K. H. Tsao, Braintree; Joseph T. De Bettencourt, West Newton, and Howard J. Rowland, Newton Highlands, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 742,690, July 5, 1968. This application June 8, 1970, Ser. No. 48,811

Int. Cl. H01q 1/04

U.S. Cl. 343—719 **14 Claims**



A subsurface traveling wave antenna in which a first and a second insulated matched load terminated linear radiating element is positioned in a plane normal to and under the surface. Each of the radiating elements are spaced apart but are located within the refracting cone at the surface interface. The load terminated ends are located at the surface end of each element. The distance between the elements is sufficiently close to provide phase reinforcement. Means are provided for mutually exciting the radiating elements, as well as for matching the phase velocity of an electromagnetic wave propagated along the radiating element to the phase velocity of an electromagnetic wave propagating in a medium external to the radiating elements.

3,680,134

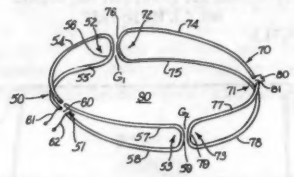
LOOP ANTENNA WITH SPACED IMPEDANCE ELEMENTS

Toshitada Doi, Yokohama, and Kosuke Akiba, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 856,281, Sept. 9, 1969, Pat. No. 3,573,832. This application July 21, 1971, Ser. No. 164,529

Int. Cl. H01q 11/12

U.S. Cl. 343—740 **11 Claims**



A directional antenna comprises a pair of semi-circular antenna members arranged to form a loop, each of the antenna members includes arcuate upper and lower wire-like conductive elements which are at a small distance from each other, at the middle of the respective antenna member, and at a relatively large distance from each other at the ends of the antenna member, and interconnecting elements are connected to the upper and lower conductive elements at the ends of each antenna member, and are preferably integral wire-like extensions of the upper and lower elements. Output terminals are connected to one of the antenna members at the narrow portion thereof, and an impedance acting as a dummy load is connected to the narrow portion of the other antenna member. The interconnecting elements at the adjacent ends of the antenna members being held in opposing spaced relation to form impedances therebetween for determining the distribution of current flow in the directional antenna.

3,680,135

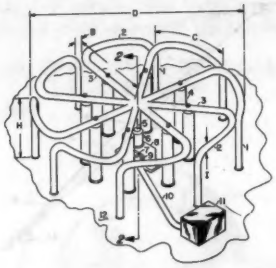
TUNABLE RADIO ANTENNA

Joseph M. Boyer, 17350 Sunset Blvd., Pacific Palisades, Calif.

Filed Feb. 5, 1968, Ser. No. 702,963

Int. Cl. H01q 11/12

U.S. Cl. 343—742 **20 Claims**



A tunable, resonant antenna in which reduction in height and multiple frequency band operation is achieved by using a symmetrical in-phase array of two or more electrically short, vertical wave radiator elements of equal length which are brought to electrical resonance by end connection to an equal number of horizontal transmission line sections so folded in alignment as to be non-radiative, such transmission line sections being commonly terminated in a shunt variable reactor located at the center of the symmetrical array to provide change of the resonant frequency.

3,680,136

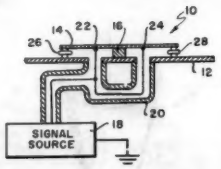
CURRENT SHEET ANTENNA

Rupert H. Collings, Santa Clara, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of Ser. No. 807,303, March 14, 1969, abandoned. This application Oct. 20, 1971, Ser. No. 190,845

Int. Cl. H01q 13/10

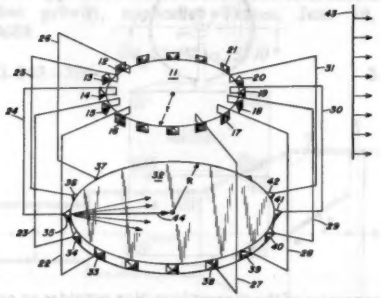
U.S. Cl. 343—746 **14 Claims**



An antenna comprises a conductive ground surface element and at least one conductive radiator element in the form of an extended two dimensional sheet. The conductive radiator element is mounted parallel to the ground surface element and no more than one-fifteenth of an operating free-space wavelength from it. Signals are fed to at least two points on the radiator element wherein the signals at the points excite the radiator element symmetrically to cause current to flow across

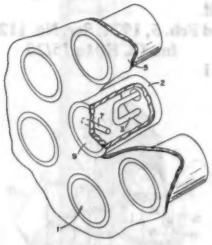
the outer surface of the conductive radiator element in the lowest mode of excitation.

3,680,137
CIRCULAR SYMMETRIC BOOTLACE LENS SYSTEM
Billy D. Wright, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Dec. 3, 1970, Ser. No. 94,709
Int. Cl. H01q *3/26*
U.S. Cl. 343—754 6 Claims



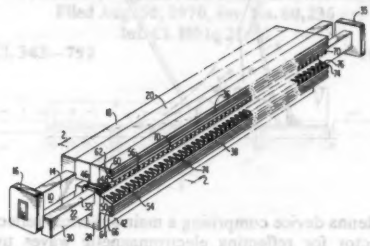
The Circular Symmetric Bootlace Lens is a system of focusing energy into a well colliminated beam. The system comprises a circular parallel plate lens and a circular array of elements. Energy is launched into the circular parallel plate lens and is collected by elements on the opposite side of the lens and then passes through equal length transmission lines to the circular array of elements where it is radiated.

3,680,138
CROSS-MODE REFLECTOR FOR THE FRONT ELEMENT OF AN ARRAY ANTENNA
Harold A. Wheeler, Smithtown, N.Y., assignor to The United States of America as represented by the Secretary of the Army
Filed Sept. 21, 1970, Ser. No. 73,822
Int. Cl. H01q *19/00*
U.S. Cl. 343—756 5 Claims



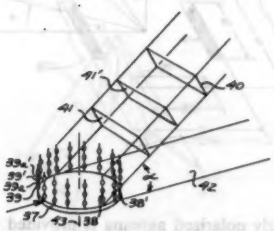
A circular aperture waveguide emitting element of cross-section comparable with the emitted wavelengths is made to have a linear polarization output by a cross-mode reflector which is a resonant bar mounted on a window located in the aperture.

3,680,139
COMMON ANTENNA APERTURE HAVING POLARIZATION DIVERSITY
Arthur T. Reynolds, Jr., Pasadena, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 17, 1970, Ser. No. 64,421
Int. Cl. H01q *13/00*
U.S. Cl. 343—756 11 Claims



A common aperture including beamwidth compensating septums or fins in conjunction with a double sidelobe suppression choke for a slotted antenna system which is adapted to illuminate a single cylindrical reflector with both horizontally and vertically polarized primary patterns which are substantially identical due to the subject aperture to provide secondary patterns reflected from the reflector which are polarization insensitive.

3,680,140
SCANNING ANTENNA HAVING A CIRCULAR LENS WITH PERIPHERALLY SPACED LINEAR ARRAYS
Gregory T. Chalfin, Pasadena; Merlin E. Louapre, Tujunga, and Richard C. Olson, Walnut, all of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
Filed Jan. 17, 1969, Ser. No. 792,070
Int. Cl. H01q *19/06*
U.S. Cl. 343—754 15 Claims



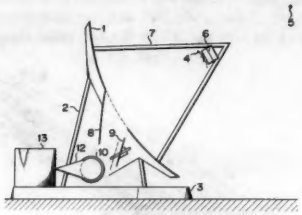
This disclosure relates to antenna arrays for propagating electromagnetic radiation wherein a lens, such as a geodesic or Luneberg lens, is utilized as a phase resolver of electromagnetic radiation coupled to an array of a plurality of antennas. The array of antennas is mounted to the lens in such a manner as to propagate a narrow beam of electromagnetic radiation. Preferably, phase-shift means is provided for simultaneously altering the degree of phase shift of propagated radiation between each radiating element by an incremental amount.

3,680,141

ANTENNA DEVICE

Mashahiro Karikomi, Tokyo, Japan, assignor to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Nov. 30, 1970, Ser. No. 93,795
Claims priority, application Japan, Nov. 28, 1969, 44/94962
Int. Cl. H01q 19/14
U.S. Cl. 343—758 6 Claims



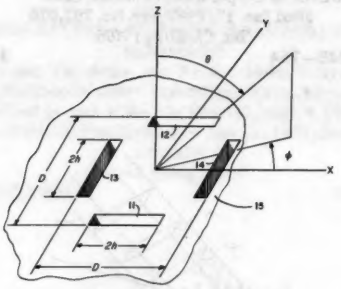
An antenna device comprising a main spherical reflector; a sub-reflector for reflecting electromagnetic waves to said main reflector so as to compensate for the spherical aberration of said main reflector, a primary radiator, plane reflectors and a parabolic reflector wherein the sub-reflector and plane reflectors are interlocked with each other so as to cause plane waves to be brought from the primary radiator to the sub-reflector through the plane reflectors and parabolic reflector.

3,680,142

CIRCULARLY POLARIZED ANTENNA

Lester C. Van Atta, Wellesley, and Robert J. Mailloux, Wayland, both of Mass., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Oct. 6, 1969, Ser. No. 863,914
Int. Cl. H01q 13/10
U.S. Cl. 343—770 13 Claims



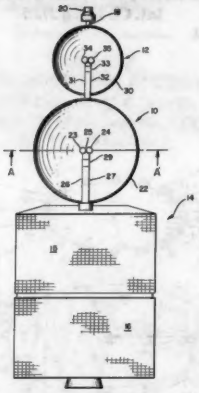
A circularly polarized antenna is provided using a planar array of at least two perpendicular pairs of linearly polarized elements (slot antennas or dipoles). The distance D between a given pair of parallel elements is selected to provide in a plane perpendicular to the elements of the pair, a field pattern very similar to that in a plane parallel to the elements, where both principal planes pass through the center of the array and are perpendicular to the plane of the array. Elements of a given pair are excited in phase, and the two pairs are excited in phase quadrature, whereby circularly polarized radiation is produced over a very wide sector of space in each principal plane, and therefore in all planes passing through the axis of the array.

3,680,143

SHAPED BEAM ANTENNA

James S. Ajioka, Fullerton, and Harold A. Rosen, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed July 1, 1970, Ser. No. 51,423
Int. Cl. H01q 19/14
U.S. Cl. 343—778 3 Claims



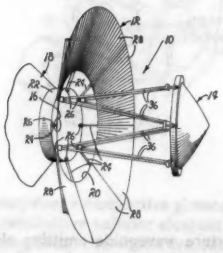
The apparatus of the present invention provides an antenna adapted to optimize the transmission or reception performance of a satellite subject to the usually encountered weight and volume constraints. The antenna features dual mode operation which provides two independent terminals, each providing the same gain pattern and polarization sense, but having differing senses of phase progression across the beam pattern. In addition, the beamwidth of the antenna is designed to cover a prescribed area on earth wherein minimum gain in this area is maximized rather than the gain at the beam center. The disclosed antenna system may also be used with a single reflector and two orthogonal polarizations, providing a total of four antenna terminals. To provide the second polarization which may be either crossed linear or counter rotating circular, each of the feeds must support the two polarizations, and the two pairs of terminals of a given polarization interconnected via individual hybrids.

3,680,144

SINGLY-CURVED REFLECTOR FOR USE IN HIGH-GAIN ANTENNAS

George M. Low, Acting Administrator of the National Aeronautics & Space Administration with respect to an invention of, and Arthur C. Ludwig, 4823 Grand Ave., Lacanada, Calif.

Filed Feb. 5, 1971, Ser. No. 112,988
Int. Cl. H01q 15/20
U.S. Cl. 343—781 6 Claims



A furlable antenna particularly suited for use aboard spacecraft. The antenna is characterized by an improved reflector plate conforming to a frusto-conical configuration

combined with a point-source feed and a secondary reflector having a reflective surface conforming to a figure of revolution generated by rotating a segment of a parabola about an axis parallel the ray path of the intermediate rays, whereby the antenna can be stowed in a furled configuration without substantially reducing its efficiency.

3,680,145

MULTIMODE HORN

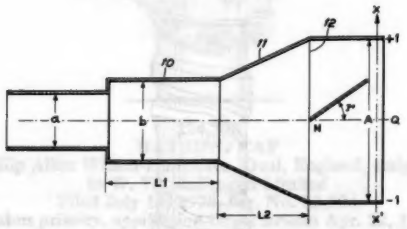
Daniel Edmond Beguin, Saint-Prix, France, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 743,527, July 9, 1968, abandoned. This application March 29, 1971, Ser. No. 129,229

Claims priority, application France, June 10, 1967, 67113688

Int. Cl. H01q *13/00*

U.S. Cl. 343—786 **3 Claims**



Multimode horn enabling to obtain a radiation pattern the phase of which is practically nil within a wide range of values of the radiation angle, characterized by the fact that the length of the paths of the modes according to the geometrical axis of the horn is such as phase differences exist between the said modes at the center of the horn aperture.

3,680,146

ANTENNA SYSTEM WITH FERRITE RADIATION SUPPRESSORS MOUNTED ON FEED LINE

Robert T. Leitner, Norwich, and John E. Drake, Sherburne, both of N.Y., assignors to Jerrold Electronics Corporation, Hatboro, Pa.

Filed March 2, 1970, Ser. No. 15,612

Int. Cl. H01q *1/50*

U.S. Cl. 343—792 **2 Claims**

A high frequency antenna system comprises an antenna, a transmission line such as a coaxial cable electrically connected to the antenna, and a magnetic member surrounding the outer conductor of the coaxial cable. The magnetic member suppresses extraneous currents that are induced in the outer conductor of the coaxial cable by radiations from the antenna. By suppressing the extraneous current in the outer conductor distortion of radiations is prevented. In the preferred embodiment, the magnetic member comprises a plurality of ferrite toroids which collectively form a cylindrical covering on the conductor. Several antenna systems of this type may be closely spaced in a compact array, and each system may operate independently of the others in the array without interference between antennas.

3,680,147

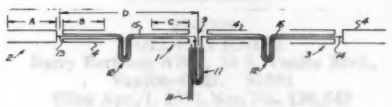
COLINEAR ANTENNA APPARATUS

Robert W. Redlich, 9 Grand Park Boulevard, Athens, Ohio

Filed Aug. 30, 1970, Ser. No. 60,236

Int. Cl. H01q *21/00*

U.S. Cl. 343—792 **10 Claims**



A colinear antenna array having three half wave dipoles equally spaced and driven by currents which are equal in magnitude and phase and are properly polarized for a three element broadside array. The equal and in-phase currents are achieved by connecting the outboard dipoles to the common feed point through 360 electrical degree lengths of coaxial cable. The 360 electrical degree length coaxial cables pass through the interior of tubing which forms the dipole arms. A half wave balun transformer changes the input impedance of the dipole elements to match the characteristic impedance of the readily available coaxial cables. A predetermined separation between the dipoles determines the angular separation between the central maximum and the first null of the radiation pattern transmitted by the antenna array.

3,680,148

OMNIDIRECTIONAL ORTHOGONAL SLANTED DIPOLE ARRAY

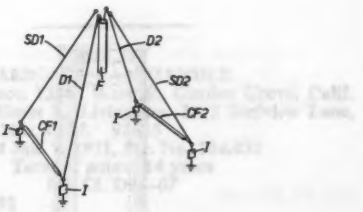
Sean Ulic Nolan, Essex, England, assignor to The Marconi Company Limited, London, England

Filed Jan. 4, 1971, Ser. No. 103,738

Claims priority, application Great Britain, Jan. 29, 1970, 4,259/70

Int. Cl. H01q *21/26*

U.S. Cl. 343—797 **3 Claims**



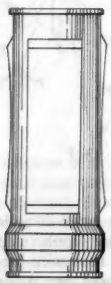
Known wide band, omni-directional, H.F. aerial system formed by two co-planar dipoles sloping downwardly and outwardly from a central twin wire feeder suffer the defect that large amounts of power are dissipated in terminating resistances at the lower ends of the dipoles. The need for the resistances is obviated by using a pair of mutually perpendicular dipoles each consisting of two co-planar half dipoles sloping downwardly and outwardly from a central feeder, the two halves of the dipoles being connected together by a length of screened cable. Insulating supports are connected between the lower ends of the half dipoles and ground.

DESIGNS

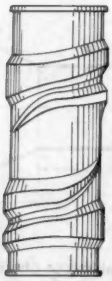
JULY 25, 1972

224,381
BOTTLE
Edward H. Lawton, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed May 24, 1971, Ser. No. 146,603
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1

224,382
CAN OR SIMILAR ARTICLE
Carmen T. Mascia, Westmont, and Richard B. Bagguley, Dolton, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed June 14, 1971, Ser. No. 153,133
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216



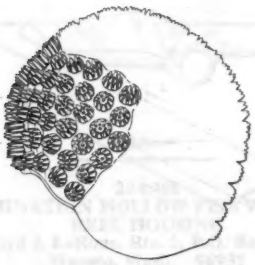
224,383
CAN OR SIMILAR ARTICLE
Carmen T. Mascia, Westmont, and Richard B. Bagguley, Dolton, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed June 14, 1971, Ser. No. 152,648
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216



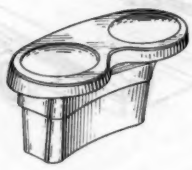
224,384
BATH BENCH
William R. Brewer, Arleta, Calif., assignor to Hamilton C. de Jong, Pasadena, Calif.
Filed Apr. 22, 1970, Ser. No. 22,554
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—70

224,385
BATHING CAP
Philip Allen Wilson-Haffenden, Deal, England, assignor to W. W. Haffenden Limited
Filed July 10, 1970, Ser. No. 23,903
Claims priority, application Great Britain Apr. 22, 1970
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—237

224,386
BATHING CAP
Philip Allen Wilson-Haffenden, Deal, England, assignor to W. W. Haffenden Limited
Filed July 10, 1970, Ser. No. 23,904
Claims priority, application Great Britain Apr. 22, 1970
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—237



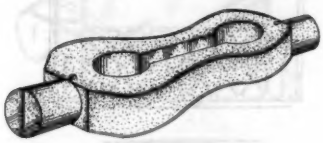
224,387
BENCH OR THE LIKE
Richard G. Reineman, Balboa, Calif., and George E. Schaefer, Muskegon, Mich., assignors to The Brunswick Corporation
Filed Nov. 20, 1970, Ser. No. 26,084
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—58



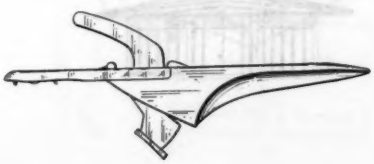
224,388
FOLDING KNIFE
Barry Bertram Wood, 38 S. Venice Blvd., Venice, Calif. 92091
Filed Apr. 1, 1971, Ser. No. 130,554
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99

224,389
FOLDING KNIFE
Barry Bertram Wood, 38 S. Venice Blvd., Venice, Calif. 92091
Filed Apr. 1, 1971, Ser. No. 130,549
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99

224,390
ABRASIVE TYPE HAND TOOL
Robert W. Martin, 1057 Pennington Road, Trenton, N.J. 08618
Filed Aug. 28, 1970, Ser. No. 24,755
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—90

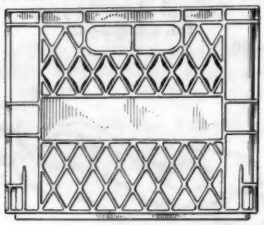


224,391
AEROSOL CAN HANDLE
Frank C. Wallace, 12861 West St., Garden Grove, Calif. 92640, and Elmer R. Livingston, 3515 Surfview Lane, Corona, Del Mar, Calif. 92625
Filed Jan. 7, 1971, Ser. No. 104,832
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—291

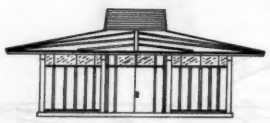


224,392
JUG
Max Ries, Chicago, Ill., assignor to Continental Specialties Company, Inc., Chicago, Ill.
Filed Feb. 16, 1971, Ser. No. 115,901
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—50

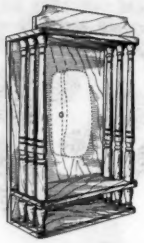
224,393
CARRYING CASE FOR BOTTLES OR THE LIKE
Theodor Box, 1108 Ailene Road, Brielle, N.J. 08730
Filed Apr. 13, 1970, Ser. No. 22,379
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—177



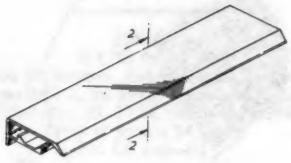
224,394
BUILDING STRUCTURE OR THE LIKE
Edgar H. Hunter and Margaret K. Hunter, both of 1108 Manchester Drive, Raleigh, N.C. 27609
Filed Mar. 12, 1970, Ser. No. 21,879
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



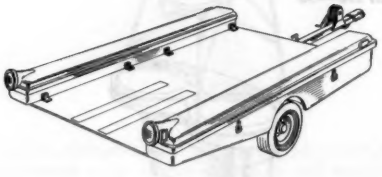
224,395
TELEPHONE SHELF
Bob R. Adams, % Bird-Adams Co., Inc., P.O. Box 38, Doraville, Ga. 30340
Filed May 17, 1971, Ser. No. 144,362
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1



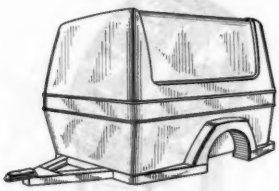
224,396
SEAL RETAINING MEMBER FOR A ROLLER SHUTTER
Donald Henry William Dover, "Igls," The Ridge, Little Baddow, near Chelmsford, England
Filed Sept. 21, 1970, Ser. No. 25,097
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6



224,397
TRAILER
Arlen L. Huff, South Bend, Ind., assignor to Sellers Manufacturing, Inc., Wakarusa, Ind.
Filed Apr. 1, 1971, Ser. No. 130,568
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3



224,398
ASPORTABLE TRAILER
Benjamin C. Baugh and Robert R. Deines, Wichita, Kans., assignors to Nationwide Trailer Rental System, Inc.
Filed June 1, 1970, Ser. No. 23,244
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3



224,399
HUNTING KNIFE
Jefferson Spivey, Los Angeles, Calif., assignor to Mark A. Brick, Beverly Hills, Calif., and to said Spivey, fractional part interest to each
Filed Dec. 21, 1970, Ser. No. 26,592
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—1

224,400
COMBINATION HOLLOW FISH POLE AND REEL HOUSING
Lloyd J. LeRoue, Rte. 2, P.O. Box 2360, Wapato, Wash. 98951
Filed Mar. 13, 1970, Ser. No. 21,903
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23

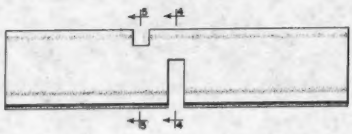
224,401
SWIMMING POOL CHLORINATOR
Harry M. Clinton, Northridge, Calif., assignor to Swimrite, Inc., Van Nuys, Calif.
Filed Dec. 15, 1970, Ser. No. 26,517
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3

224,402
FAUCET
Dee L. Jenner, San Pedro, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.
Filed Oct. 5, 1970, Ser. No. 25,333
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—25

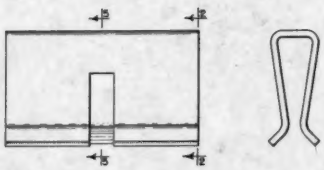
224,403
FAUCET
Dee L. Jenner, San Pedro, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.
Filed Oct. 5, 1970, Ser. No. 25,334
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—23

224,404
FAUCET
Dee L. Jenner, San Pedro, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.
Filed Oct. 5, 1970, Ser. No. 25,332
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—25

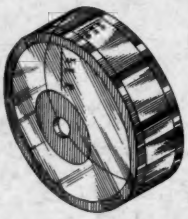
224,405
INSULATED JUMPER CLIP
Daniel C. Heck, Deerfield, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Sept. 23, 1970, Ser. No. 25,166
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D26—1



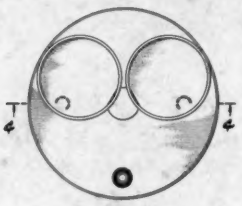
224,406
JUMPER CLIP
Daniel C. Heck, Deerfield, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Jan. 19, 1971, Ser. No. 107,876
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D26—1

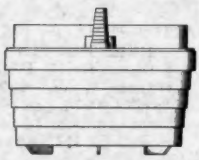


224,407
CIRCULAR RADIO TUNING FREQUENCY CONTROL WITH TRANSVERSE INDICATOR FACES
Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed Mar. 12, 1971, Ser. No. 123,938
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—1

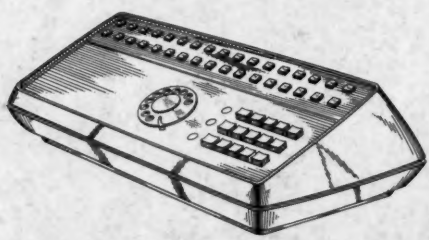


224,408
FILTRATION UNIT FOR BLOOD AND OTHER MEDICAL LIQUIDS
Frank M. Edwards, West Los Angeles, Calif., assignor to McGaw Division of American Hospital Supply Corporation, Glendale, Calif.
Filed Dec. 31, 1970, Ser. No. 26,714
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D16—2

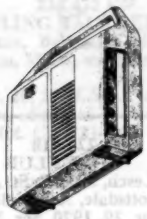




224,409
TELEPHONE OPERATOR'S ANSWER TURRET
George M. Janda, Westchester, Ill., assignor to Automatic Electric Laboratories, Inc., Northlake, Ill.
Filed Dec. 21, 1970, Ser. No. 26,731
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



224,410
CASSETTE TAPE RECORDER
Takemi Ebata, Kyoto, Japan, assignor to Matsuhita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 6, 1971, Ser. No. 131,842
Claims priority, application Japan Oct. 9, 1970
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



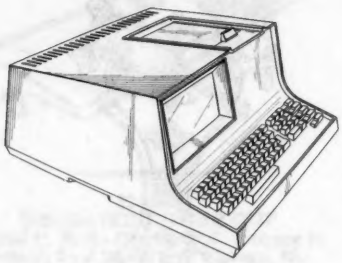
224,411
CHRISTMAS ORNAMENT
Dario Moranduzzo, Stroda Tosco Romagnola 463, Florence, Italy
Filed May 28, 1971, Ser. No. 148,289
Claims priority, application Italy Dec. 1, 1970
Term of patent 7 years
Int. Cl. D11—*05*
U.S. Cl. D29—1

224,412
RELIGIOUS ORNAMENT
George M. Wallace, 64 Clinton St., Paterson, N.J. 07522
Filed Apr. 21, 1971, Ser. No. 136,299
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23

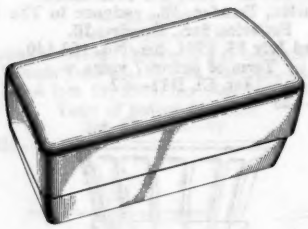
224,413
VASE
Zachary P. Abuza, 19425 Van Aken 44122, and Stanley W. Morgenstern, 2887 Broxton 44120, both of Shaker Heights, Ohio
Filed Jan. 25, 1971, Ser. No. 109,738
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—28

224,414
FLORAL VASE OR THE LIKE
Edwin K. Kaelke, Dundee, Ill., assignor to The Haeger Potteries, Inc., Dundee, Ill.
Filed July 15, 1971, Ser. No. 163,140
Term of patent 7 years
Int. Cl. D11—*02*
U.S. Cl. D29—28

224,415
COMPUTER TERMINAL
Jon P. Ray and Austin O. Roche, San Antonio, Tex., and John R. Frassanito, Oyster Bay, N.Y., assignors to Computer Terminal Corporation, San Antonio, Tex.
Filed Nov. 27, 1970, Ser. No. 26,176
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



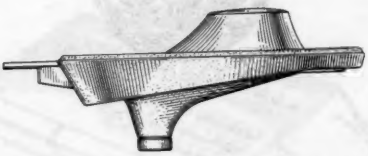
224,416
OUTDOOR TELEPHONE ENCLOSURE
Donald Michael Genaro, Haworth, N.J., and Ralph Andrew Holmes and Stanley Edward Seretny, Indianapolis, Ind.; said Genaro and said Seretny assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., said Holmes assignor to Western Electric Company, New York, N.Y.
Filed Sept. 3, 1970, Ser. No. 24,831
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



224,417
TOY MONKEY FIGURE
Jennifer Jenkins Houser, 520 1 E., Apt. 3, Provo, Utah 84601
Filed Dec. 28, 1970, Ser. No. 26,654
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2

224,418
GOLF CLUB
Eugene H. Lesch, 5702 E. St. Andrews Way, Scottsdale, Ariz. 85254
Filed Apr. 29, 1970, Ser. No. 22,699
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

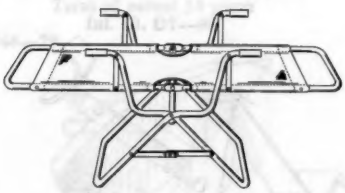
224,419
CLUSTER BOWLING BALL RETURN RACK
George E. Schaefer, Muskegon, Mich., assignor to The Brunswick Corporation
Filed Oct. 26, 1970, Ser. No. 25,643
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



224,420
BOWLING BALL RETURN RACK WITH PROVISION FOR BOWLER IDENTIFICATION PANEL
Richard G. Reineman, Balboa, Calif., and George E. Schaefer, Muskegon, Mich., assignors to The Brunswick Corporation
Filed Oct. 26, 1970, Ser. No. 25,644
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

224,421
IN-LINE BOWLING BALL RETURN RACK
Richard G. Reineman, Balboa, Calif., and George E. Schaefer, Muskegon, Mich., assignors to The Brunswick Corporation
Filed Nov. 20, 1970, Ser. No. 26,088
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

224,422
EXERCISER
Barney A. Beach, Memphis, Tenn., assignor to Health Thru Education, Inc., Memphis, Tenn.
Filed Dec. 3, 1970, Ser. No. 26,267
Term of patent 3½ years
Int. Cl. D21—*02*
U.S. Cl. D34—5

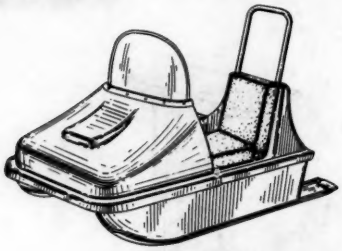


224,423
GOLF GAME CONSOLE
Robert I. Anderson, Spring Lake, and Phillip E. Crossman, Ada, Mich., assignors to Brunswick Corporation
Filed Dec. 11, 1970, Ser. No. 26,401
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

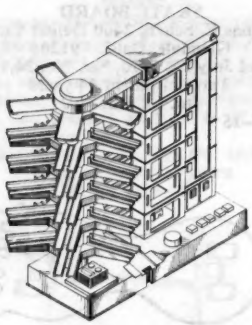
224,424
SKATE BOARD
Thomas E. Schell, 2460 Delisle Court, Glendale, Calif. 91208
Filed July 27, 1970, Ser. No. 24,136
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

224,425
TOY BLOCK
Alwin J. Stahel II, New Brighton, Minn., assignor to General Foods Corporation, White Plains, N.Y.
Filed Oct. 30, 1970, Ser. No. 25,729
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

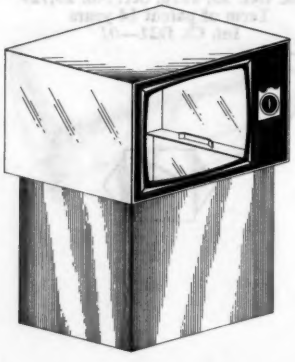
224,426
SLEIGH
Leonard Marois, Montmagny, Quebec, Canada, assignor to Aurele Marois Inc., Montmagny, Quebec, Canada
Filed Jan. 11, 1971, Ser. No. 105,775
Claims priority, application Canada Dec. 29, 1970
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D34—15



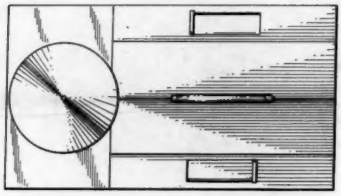
224,427
TOY PARKING GARAGE
Eijiro Tomiyama, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Jan. 15, 1971, Ser. No. 106,937
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



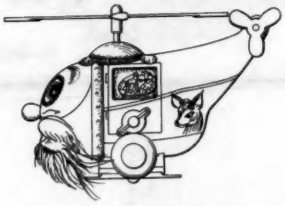
224,428
TELEVISION TOY
William R. Dixon, Le Roy, N.Y., assignor to GTE Sylvania Incorporated
Filed Feb. 8, 1971, Ser. No. 113,808
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



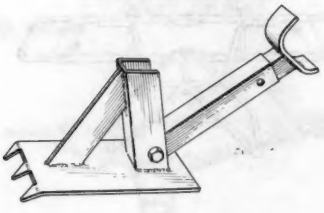
224,429
TOY FARMHOUSE
Frank C. Fusco, Monroe, N.Y., assignor to Louis Marx & Co. Inc.
Filed Apr. 19, 1971, Ser. No. 135,260
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



224,430
HELICOPTER TOY
Perry Feuer, Roslyn, N.Y., assignor to Creative Creations, Inc., Hicksville, N.Y.
Filed June 9, 1971, Ser. No. 151,616
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



224,431
JACK
Robert J. Keegan, 111 Welland Ave., Toronto 7, Ontario, Canada
Filed June 8, 1971, Ser. No. 151,158
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D41—1



224,432
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, Fresh Meadows, N.Y., assignor to Startime Watch Co., Inc., Roslyn, N.Y.
Filed Nov. 4, 1970, Ser. No. 25,807
Term of patent 3½ years
Int. Cl. D10—*07*
U.S. Cl. D42—1

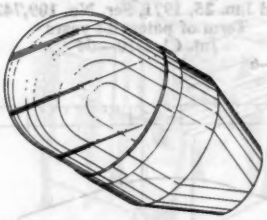
224,433
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, Fresh Meadows, N.Y., assignor to Startime Watch Co., Inc., Roslyn, N.Y.
Filed Nov. 4, 1970, Ser. No. 25,810
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D42—1

224,434
CAKE DECORATING MARKER
Freda Dailey, 1312 W. High St., Haddon Heights, N.J. 08035
Filed Oct. 30, 1970, Ser. No. 25,740
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—29

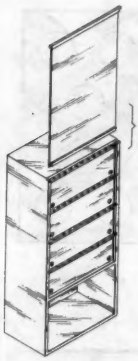
224,435
WINE BOTTLE RACK
David M. Stravitz, 205 3rd Ave., New York, N.Y. 10003
Filed Dec. 28, 1970, Ser. No. 26,646
Term of patent 3½ years
Int. Cl. D6—*99*
U.S. Cl. D44—29

224,436
COMBINED WASHER AND SCALER FOR FISH
Robert T. Olmschied, 3535 Lyndale Ave. N., Minneapolis, Minn. 55412
Filed Mar. 15, 1971, Ser. No. 124,626
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—29

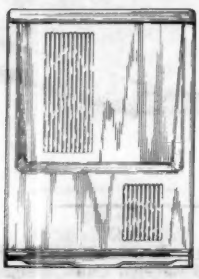
224,437
HOUSING FOR AIRCRAFT SEARCHLIGHT
Richard D. Wood, Pasadena, Calif., assignor to Optical Radiation Corporation, Monrovia, Calif.
Filed Oct. 23, 1970, Ser. No. 25,618
Term of patent 14 years
Int. Cl. D26—*06, 03*
U.S. Cl. D48—32



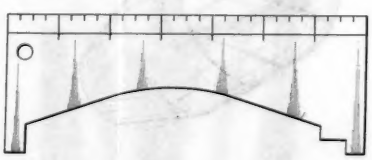
224,438
COMBINED TAPE DISPENSING CABINET AND DRAWERS THEREFOR
Milton Rosenblum, 8–01 Plymouth Drive, Fair Lawn, N.J. 07509
Filed Oct. 26, 1970, Ser. No. 25,657
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D52—2



224,439
TOWEL DISPENSING CABINET
John B. Engel, Green Bay, Wis., assignor to Bay West Paper Company, Green Bay, Wis.
Filed Nov. 20, 1970, Ser. No. 26,083
Term of patent 14 years
Int. Cl. D31; D6—*04*
U.S. Cl. D52—2

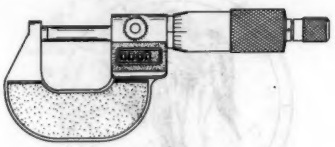


224,440
CRAB SIZING GAUGE
Albert E. Daughtry, 700 Wilkes Drive, Eugene, Oreg. 97402
Filed Jan. 25, 1971, Ser. No. 109,742
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6

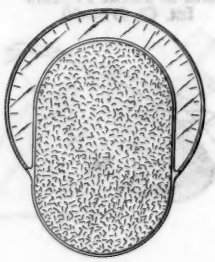


224,441
METAL DETECTOR
Robert F. Gardiner, 4729 N. 7th Ave., Phoenix, Ariz. 85013
Filed Apr. 7, 1971, Ser. No. 132,251
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6

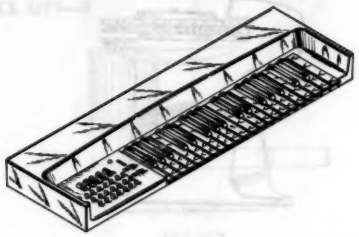
224,442
DIGITAL MICROMETER
Goro Nishikata, Kawasaki, Japan, assignor to Yehan Numata, Yokohama, Japan
Filed Aug. 26, 1970, Ser. No. 24,711
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



224,443
BATHROOM SCALE
Dieter Rams, Konigstein, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Jan. 27, 1971, Ser. No. 110,368
Claims priority, application Germany Oct. 17, 1970
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—10

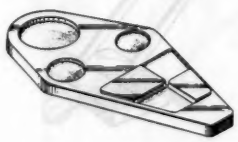


224,444
KEYBOARD FOR MUSICAL INSTRUMENT OR THE LIKE
Frederick R. Chilton, Palos Verdes Estates, Edward Barczak, Los Angeles, and Salvatore Merendino, Pasadena, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 11, 1971, Ser. No. 105,772
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—1

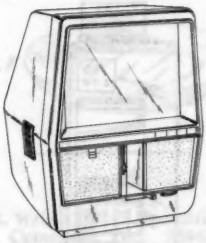


224,445
SNARE DRUM BRUSH OR SIMILAR ARTICLE
Alfred J. De Christopher II, 10072 Westwanda Drive, Beverly Hills, Calif. 90210
Filed Jan. 25, 1971, Ser. No. 109,745
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D56—1

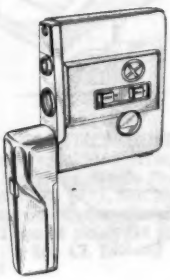
224,446
HAND MAGNIFIER
John Orfei, North Revere, Mass., assignor to American Science and Engineering, Inc., Cambridge, Mass.
Filed Oct. 13, 1969, Ser. No. 19,518
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1



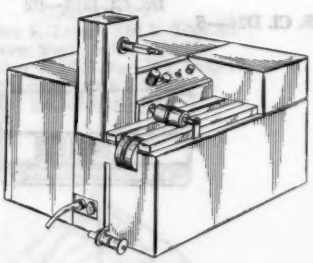
224,447
REAR PROJECTION VIEWER
Paul D. Catalano, Manhasset, and George C. Hoehne, Bellerose, N.Y., assignors to Retention Communications Systems, Inc., New York, N.Y.
Filed Dec. 14, 1970, Ser. No. 26,498
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1



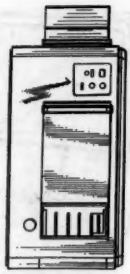
224,448
MOTION PICTURE CAMERA
Masahiro Fukuda, Tokyo, Japan, assignor to Fuji Shashin Film Kabushiki Kaisha, Minamiashigara-machi, Ashigarakami-gun, Kanagawa-ken, Japan
Filed Feb. 1, 1971, Ser. No. 111,804
Claims priority, application Japan Aug. 1, 1970
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



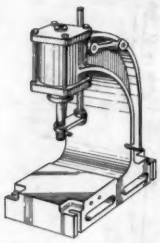
224,449
FILM CUTTER
Thomas C. Laughon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 15, 1971, Ser. No. 124,641
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1



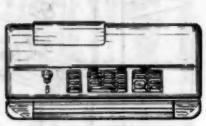
224,450
COPIER
Kazuteru Nagata, Fujisawa, and Tatsuya Mikami, Narashino, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Apr. 22, 1971, Ser. No. 136,628
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



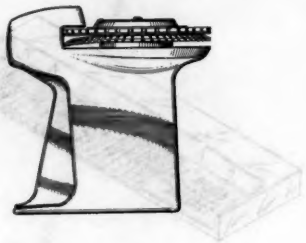
224,451
AIR-OPERATED PRESS FRAME
Robert G. Marks, 63 Winthrop Road, Brookline, Mass. 02147
Filed Sept. 28, 1970, Ser. No. 25,217
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D63—1



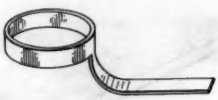
224,452
DESK ELECTRONIC CALCULATOR
Tatsuya Mikami, Narashino, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Oct. 15, 1970, Ser. No. 25,507
Claims priority, application Japan Apr. 16, 1970
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



224,453
TOOL FOR EMBOSSING STRIPS OF MATERIAL
Donald E. Van Arnam, Surfside, Calif., assignor to Avery Products Corporation, San Marino, Calif.
Filed Nov. 4, 1970, Ser. No. 25,821
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—10

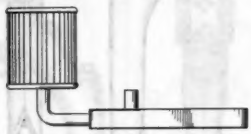


224,454
HOLDER FOR HIGHWAY FLARES
George L. Kernan, 1810 Market Ave., San Pablo, Calif. 94806
Filed Oct. 30, 1970, Ser. No. 25,736
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1

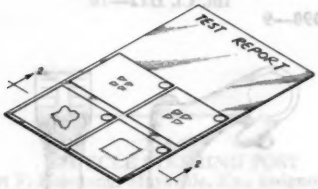


224,455
PEN DESK SET
Gerald N. Oberton, Addison, Ill., assignor to Sanford Research Company
Filed Jan. 18, 1971, Ser. No. 107,609
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—5

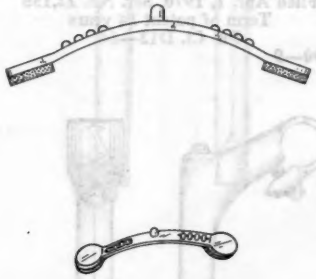
224,456
POISONOUS GAS ELIMINATING DEVICE OF AN ENGINE FOR AN AUTOMOBILE
Jiro Sakai, 1954–6, Yahatamachi, Suzaka; and Junichi Kawaguchi 322, Oaza-Koyama, Suzaka, both of Nagano Prefecture, Japan; and Michihiro Noda, 1, 4-chome, Showa, Chiryumachi Hekikai-gun, Aichi Prefecture, Japan
Filed July 23, 1970, Ser. No. 24,073
Claims priority, application Japan Feb. 5, 1970
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1



224,457
SKIN TEST INDURATION REPORT CARD
Robert Oppenheimer, Old Greenwich, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sept. 8, 1970, Ser. No. 24,877
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1

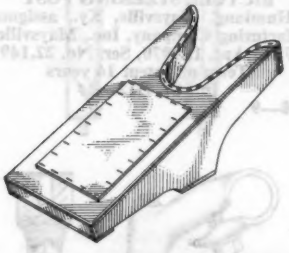


224,458
RETENTION SUTURE BRIDGE
Ingram S. Chodorow, New York, N.Y., assignor to Technalytics Incorporated, New York, N.Y.
Filed June 3, 1970, Ser. No. 23,284
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D83—12

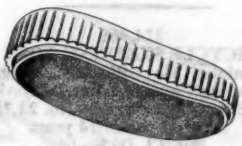


224,459
ILLUMINABLE MIRROR
Donald P. Stahl, North Bellmore, N.Y., assignor to Telecommunications Industries, Incorporated, Farmingdale, N.Y.
Filed Apr. 6, 1970, Ser. No. 22,286
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D86—10

224,460
BOOTJACK
Earl R. Wright, 200 E. Industrial Blvd., Comanche, Tex. 76442
Filed Dec. 1, 1970, Ser. No. 26,237
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D86—10

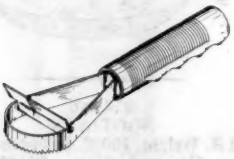


224,461
CLOTHESBRUSH
Charles Edwards Ferris, Don Mills, Ontario, Canada, assignor to Stanwood Plastic Products Limited
Filed Mar. 17, 1971, Ser. No. 125,444
Claims priority, application Canada Sept. 21, 1970
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D86—13

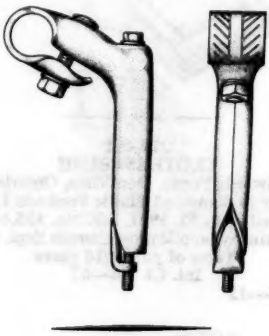


224,462
UMBRELLA
Maurice E. Lyons, 300 E. 74th St., New York, N.Y. 10021
Filed June 2, 1971, Ser. No. 149,411
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—3

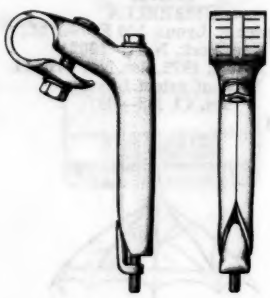
224,463
SQUASH KNIFE
Wilford B. Nelson, 9630 219th SW., Edmonds, Wash. 98020, and Stuart D. Nelson, 15136 Beach Drive NE., Seattle, Wash. 98155
Filed May 21, 1971, Ser. No. 146,005
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D89—1



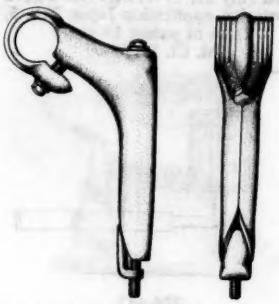
224,464
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,149
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



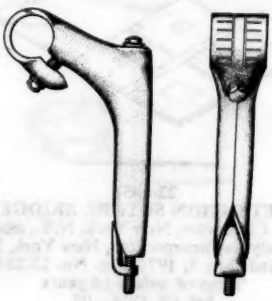
224,465
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,151
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



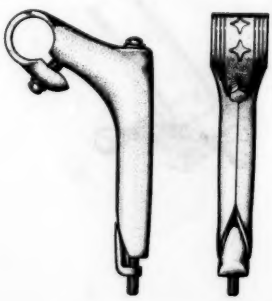
224,466
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,152
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



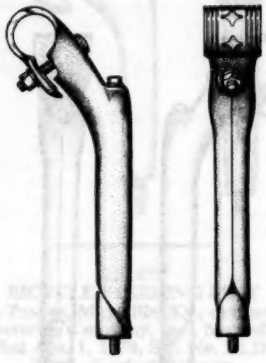
224,467
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,153
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



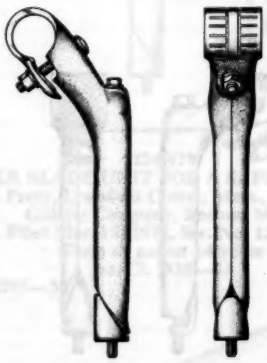
224,468
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,155
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



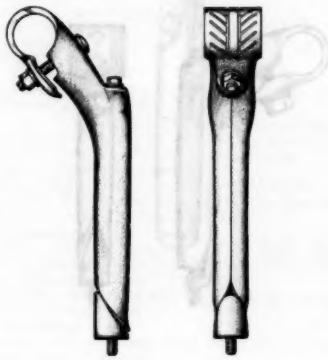
224,469
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,157
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



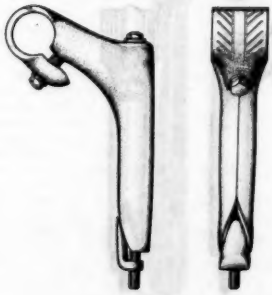
224,470
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,158
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



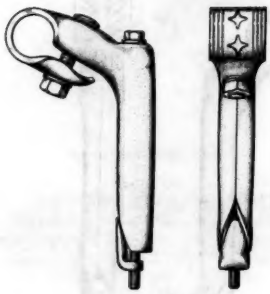
224,471
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,159
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



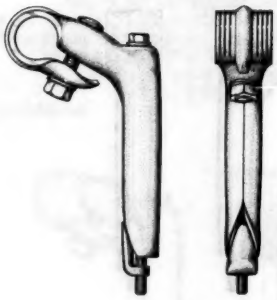
224,472
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,160
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



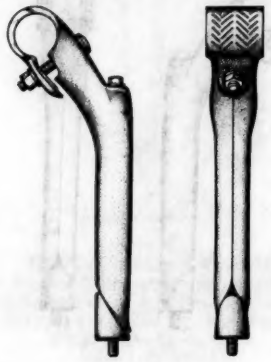
224,473
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,161
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



224,474
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,175
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9

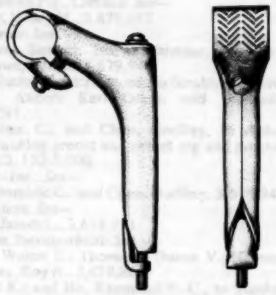


224,475
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,176
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9

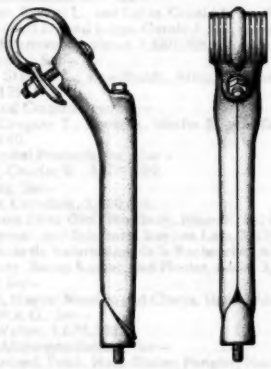


224,476
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,177
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9

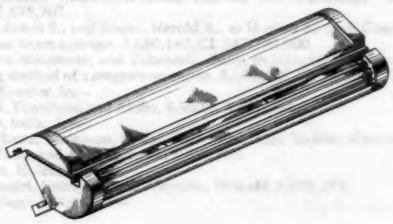
224,477
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,180
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



224,478
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,183
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



224,479
SINGLE BLADE UNIT FOR A SAFETY RAZOR
Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Mar. 15, 1971, Ser. No. 124,621
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



224,480
SAFETY RAZOR OR SIMILAR ARTICLE
Martin Glaberson, Ardsley, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Apr. 16, 1971, Ser. No. 134,922
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3

224,481
RAZOR HANDLE
Norman D. Poisson, Andover, Mass., assignor to The Gillette Company, Boston, Mass.
Continuation-in-part of design application Ser. No. 124,619, Mar. 15, 1971. This application May 10, 1971, Ser. No. 142,103
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3

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TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF JULY, 1972

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Baranchikov, Vladimir Mikhailovich: *See—*
Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.

Baranowski, Frank, Jr. Torch handle. 3,679,171, Cl. 251.148.000.

Barber-Colman Company: *See—*
Finkbiner, Roy R., 3,679,490.

Barber-Greene Company: *See—*
Martenson, Earl D.; and Gebhardt, James J., Jr., 3,678,817.

Barbier, Jean-France Leon Paul; and Renard, Guy, to Eastman Kodak Company. Fogged, direct-positive silver halide emulsion containing nitron. 3,679,424, Cl. 96-109.000.

Barchard, Francis M., to Singer Company, The. Automatic dewatering of gas wells. 3,678,997, Cl. 166-53.000.

Barclay, Ralph R., to Minnesota Mining and Manufacturing Company. Dropout compensator for color television. 3,679,814, Cl. 178-5.4cd.

Bard, John C.; and Olson, Floyd C., to Mayer, Oscar, & Co., Inc. Method of preparing fresh uncured meat products. 3,679,434, Cl. 99-107.000.

Bard, Martin. Shelf-supporting standard. 3,679,164, Cl. 248-243.000.

Bargain, Michel; Gruffaz, Max; Laurent, Serge; and Mallet, Maurice, to Rhone-Poulenc S.A. Curable compositions of an unsaturated bisamide, a diamine, and a multicyclic aromatic compound. 3,679,639, Cl. 260-78.00u.

Barlow, Sidney D.: *See—*
Andrews, Francis W.; Sussman, Philip S.; and Barlow, Sidney D., 3,678,521.

Barocca, Aldo J.; and Benedict, Ralph H., to Olin Mathieson Chemical Corporation. Support means for fusees. 3,678,856, Cl. 102-37.400.

Barrett, Maurice L., Jr. Meter proving system. 3,678,730, Cl. 73-3.000.

Barron, Roger L.; Kelleher, Kenneth S.; and Vieth, George C., Jr., to Adaptronics, Inc. Self-programming antenna tracking system. 3,680,126, Cl. 343-117.00r.

Barry, Gerald J.: *See—*
Roberts, William E.; and Barry, Gerald J., 3,679,215.

Barton, James A.: *See—*
Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., 3,680,129.

Basche, Malcolm; Fanti, Roy; Galasso, Francis S.; Kuntz, Urban E.; and Schile, Richard D., to United Aircraft Corporation. Method for producing boron-carbon fibers. 3,679,475, Cl. 117-216.000.

Baskin, Herbert B.; Belady, Laszlo A.; Evangelisti, Carlo J.; and Morse, Stephen P., to International Business Machines Corporation. Light pen arrangement for providing three degrees of freedom for a light pen in an interactive graphics system. 3,680,078, Cl. 340-324.00a.

Bassett, Kirk W.; and Ford, Frank P., to Rice Barton Corporation. Splicing webs. 3,679,524, Cl. 156-502.000.

Bath Institute of Medical Engineering, The: *See—*
Morse-Brown, Austin G., 3,679,260.

Battelle Development Corporation, The: *See—*
Cremeans, George E., 3,679,738.

Battenfeld Maschinenfabriken GmbH., Firma, mesne: *See—*
Stuhlmann, Hans; and Stuhlmann, Werner, 3,678,597.

Batzer, Hans: *See—*
Habermeier, Juergen; Batzer, Hans; and Porret, Daniel, 3,679,681.

Baumgartner, Emma F. Over arm carrying bag. 3,678,977, Cl. 150-30.000.

Bayle, Guy P.; and Johnson, Douglas A., to North American Aviation, Inc. Terrain-warning radar system. 3,680,094, Cl. 343-7.0ta.

Bayze, Thomas F. Air pollution circulation device. 3,678,658, Cl. 55-230.000.

Beal, Philip F., III: *See—*
Babcock, John C.; and Beal, Philip F., III, 3,679,705.

Beaman, Alden Gamaliel; Duschinsky, Robert; and Tautz, William Paul, to Hoffmann- La Roche Inc. 2-Nitroimidazoles. 3,679,698, Cl. 260-309.000.

Beaton, John M.; Van Rheenen, Verlan H.; and Parikh, Jekishan R., to Upjohn Company, The. Process for the selective reduction of 6-methylene-3-keto-Δ-steroids. 3,679,715, Cl. 260-397.100.

Beatrice Foods Co.: *See—*
Brorson, Donald L.; and Magnuson, Raymond A., 3,679,100.

Bechtel International Corporation: *See—*
Goerz, David J., Jr.; and Stephansen, Erik W., 3,678,594.
Ragsdale, Harold E., 3,678,950.

Beck, Edward: *See—*
Bedo, Alfred; and Beck, Edward, 3,679,169.

Beck, Marvin G.: *See—*
Woods, John A.; and Beck, Marvin G., 3,678,529.

Beck, William: *See—*
Wakefield, Norman; Alexander, Stuart John; Morrish, James Francis Gerrards Cross; Beck, William; Groves, Raymond Sturgis; and Harvey, Michael J., 3,678,644.

Becker, Albert H.; Hart, Joseph M.; and Quaal, John A., to Cutler-Hammer, Inc. Auxiliary switch for an electromagnetic relay. 3,680,016, Cl. 335-106.000.

Becker, Raymond M., to Webb, Jervis B., Company. Roller transfer conveyor. 3,679,043, Cl. 198-105.000.

Beckett, William J.: *See—*
North, William L.; and Beckett, William J., 3,679,106.

Beckman, William J.: *See—*
Lloyd, Allen H.; and Beckman, William J., 3,678,525.

Becky, Raymond, to Westinghouse Air Brake Company. Electronic scanner. 3,679,828, Cl. 178-7.600.

Bedford, Burnice D., to General Electric Company. Compatible brushless reluctance motors and controlled switch circuits. 3,679,953, Cl. 318-138.000.

Bedo, Alfred; and Beck, Edward, to Sno-Trik Company. High pressure valve and method. 3,679,169, Cl. 251-88.000.

Beereboom, John J., to Pfizer Inc. γ-ionone derivatives and process therefor. 3,679,754, Cl. 260-587.000.

Beers, Le Roy W.: *See—*
De Santis, Alfred J.; Beers, Le Roy W.; White, James A.; and Moysey, John A., 3,680,058.

Beesley, James P.; and Gunn, John B., to International Business Machines Corporation. High current low voltage regulated power supply. 3,679,959, Cl. 321-47.000.

Beguin, Daniel Edmond, to International Standard Electric Corporation. Multimode horn. 3,680,145, Cl. 343-786.000.

Behrens, Alvin J. Chuck jaw insert and assembly. 3,679,221, Cl. 279-1.0sj.

Beierer, Joachim: *See—*
Picard, Karl-Heinz; and Beierer, Joachim, 3,679,909.

Beightol, Leroy Earl, to Nutt, Roy, mesne. Biopsy method. 3,679,450, Cl. 117-3.000.

Beiswanger, John Paul Gerhardt; and Nassry, Assadullah, to GAF Corporation. Glycol ether-chromium corrosion resistant coatings for metallic surfaces. 3,679,493, Cl. 148-6.160.

Belady, Laszlo A.: *See—*
Baskin, Herbert B.; Belady, Laszlo A.; Evangelisti, Carlo J.; and Morse, Stephen P., 3,680,078.

Bell, Harvey W., III, to Stewart-Warner Corporation. Device for supporting semiconductor wafers. 3,678,893, Cl. 118-500.000.

Bell, James C.: *See—*
Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., 3,680,129.

Bell Tech Systems, Inc.: *See—*
Zweig, Leon A., 3,679,483.

Bell Telephone Laboratories, Incorporated: *See—*
Biazzo, Martin Robert; King, Bernard George; and Ortel, William Charles Gormley, 3,678,574.
Bonner, William Adam; Singh, Shobha; and Van Uitert, Le Grand Gerard, 3,679,907.
Braun, Edwin Julius; Maxon, Rodney Robert; Meise, Henry August, Jr.; Taylor, George William; and Witmore, Ronald Kirk, 3,679,834.
Buus, Robert George, 3,679,984.
Chesler, Ronald Benjamin; and Maydan, Dan, 3,680,000.
Chow, Woo Foung, 3,680,067.
Copeland, John Alexander, III, 3,680,066.
Dembiak, Matthew Raymond; and Webster, George H., 3,679,503.
Halpern, Samuel Walter, 3,679,832.
Howson, Robert D., 3,679,977.
Kropfl, Walter Joseph, 3,680,056.
Moschytz, George Samson, 3,679,987.
Nguyen, Van-Tran; and Shah, Jagdeep Chandravadan, 3,679,994.
Nutt, Wendell Glenn, 3,679,810.
Osborne, Thomas Lawrence, 3,680,108.
Paoli, Thomas Lee; and Ripper, Jose Ellis, 3,680,001.
Pratt, Jeofry Stuart Courtney, 3,679,818.
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Rosenberg, Robert, 3,679,313.
Schneider, Herbert Anton, 3,679,914.
Schroeder, Manfred Robert, 3,679,821.
Sondhi, Man M., 3,679,020.
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Belyaeva, Ljudmila Pavlovna: *See—*
Ezhov, Leonid Antipovich; Kudevitsky, Yankel Veniaminovich; and Belyaeva, Ljudmila Pavlovna, 3,678,554.

Belzak Corporation: *See—*
Zak, Henry C., 3,679,659.

Bencze, William Laszlo, to Ciba Corporation. Bicycloalkyl phenoxyaliphatic acid-compositions. 3,679,800, Cl. 424-267.000.

Bender, Alfred: *See—*
Ostwald, Fritz; Bender, Alfred; and Nonn, Gerhard, 3,678,954.

Bender, David L.; and Lane, Richard L., to Kayex Corporation. Device for tensioning an annular sawblade. 3,678,917, Cl. 125-12.000.

Bendix Corporation, The: *See—*
Blatter, Albert, 3,678,733.
Colson, William B.; Niedermiller, Herbert C.; and Deradoorian, Bagdasar, 3,679,384.
Ensslin, Frieder H., 3,679,571.
Fickenscher, William E., 3,679,874.
Hall, Roger D.; and Clasby, David N., 3,680,131.
Helava, Uuno V.; and Forrest, Robert B., 3,678,582.
Miller, Donald L., 3,679,034.

Benedict, Ralph H.: *See—*
Barocca, Aldo J.; and Benedict, Ralph H., 3,678,856.

Beniada, Maurice: *See—*
Jacques, Jean-Marie; and Beniada, Maurice, 3,679,935.

Benjamin, John, to United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty's Government of the. Aircraft landing radio guidance receiver which warns of signal reflections. 3,680,120, Cl. 343-109.000.

Bennett, John D., to Sun Oil Company. Method and apparatus for cutting ice. 3,678,873, Cl. 114-42.000.

Bennett, John S., to Massey-Ferguson Services, N.V. Lockable overrun device. 3,679,032, Cl. 192-46.000.

Bennett, William C., to Novar Corporation. Character select indicator for typewriter. 3,679,037, Cl. 197-19.000.

Benson, Royal H.; and Bodre, Robert J., to Monsanto Company. Safety device for removing tritium gas from a gas stream. 3,679,366, Cl. 23-254.00r.

Bentholm, Svend Asger Rud; and Koenen, Wilhelm Engelinus, to Organon Inc. Process for the manufacture of rapidly disintegrating solid dosage unit forms. 3,679,794, Cl. 424-148.000.

Bentley Machine Development Company Limited, The: *See—*
Gostelow, Daniel William Fredrick, 3,678,710.

Beny, Janos; Kingsbury, LC James; and Scribner, David L., to Mattel, Inc. Toy coupling apparatus and method for uncoupling same. 3,678,618, Cl. 46-221.000.

Beresniewicz, Aleksander, to Du Pont de Nemours, E. I., and Company. Uniform ethylene/vinyl acetate/N-methylol acrylamide terpolymer dispersions. 3,679,620, Cl. 260-29.6ta.

Berger, Hans, to Zentro Albert Burkle Kommanditgesellschaft. Apparatus for the thermostatic regulation of room temperatures. 3,680,020, Cl. 337-305.000.

Bergey, John M. K.; and Kalatucka, Stephen, to United States of America, Navy. Alerting system. 3,680,046, Cl. 340-146.200.

Bergmann, Michael J.., to Du Pont de Nemours, E. I., and Company. Capacitor assembly having electrode and dielectric layers overlapped for sealing. 3,679,943, Cl. 317-230.000.

Bergna, Horacio E., to Du Pont de Nemours, E. I., and Company. Hot-pressed titanium nitride-titanium carbide compositions. 3,679,442, Cl. 106-43.000.

Bergy, Malcolm E.; Herr, Ross R.; and Mason, Donald J., to Upjohn Company, The. Antibiotic process of treatment. 3,679,787, Cl. 424-181.000.

Beringer, Charles W.: *See—*
Rothwell, Ronald E.; and Beringer, Charles W., 3,678,676.

Berman, George A.: *See—*
Drutchas, Gilbert H.; Berman, George A.; and Spencer, Phillip B., 3,679,329.

Bernas, Richard J.; and Kaczynski, Clarence J., to Dow Chemical Company, The. Ball valve with positive locking mechanism. 3,679,170, Cl. 251-104.000.

Berndtsson, Gunnar Ingemar: *See—*
Unger, Hans Peter Olof; Westberg, Johan E. H.; Berndtsson, Gunnar Ingemar; and Schwartz, Stephan Lars, 3,679,128.

Bernstein, William: *See—*
Hansen, David O.; Altshuler, Saul; Bernstein, William; and Hamermesh, Bernard, 3,679,897.

Berry, David A.; and Gynn, Gilbert M., to Dart Industries Inc. Allyl carbonate and substituted allyl carbonate esters of 1,4-dimethylol cyclohexane, and polymers thereof. 3,679,727, Cl. 260-463.

Berry, Norman H. Ignition circuit radiation suppression resistor. 3,680,029, Cl. 338-334.000.

Berry, Ronald G. Hair cutting apparatus. 3,678,944, Cl. 132-45.00r.

Bert, Stephen F., to Textron, Inc. End attachment for watch bands. 3,678,544, Cl. 24-265.00b.

Berthier, Guy: *See—*
Commercon, Jean Claude; and Berthier, Guy, 3,679,968.

Bertin, Daniel; andPerronnet, Jacques, to UCLAF-Roussel. Alkoxyal-kylamino-s-triazine herbicides. 3,679,393, Cl. 71-93.000.

Bertolacini, Ralph J., to Standard Oil Company (Indiana). Reforming with a platinum mordenite-alumina catalyst. 3,679,575, Cl. 208-65.000.

Besser Company: *See—*
Springs, Thomas W., 3,679,340.

Betker, Ted C.: *See—*
Tabor, Joseph M.; and Betker, Ted C., 3,678,607.

Betts, Colin; and Collinson, Alfred Edward, to United Kingdom Atomic Energy Authority. Liquid flow control devices. 3,678,963, Cl. 138-41.000.

Betzer, Cloyd L., to Roper Corporation. Burner grate. 3,679,467, Cl. 117-129.000.

Bewley, Lawrence L.: *See—*
Jorgensen, Arnold J.; Bewley, Lawrence L.; and White, Kenneth H., 3,680,005.

Bezbatchenko, John W.: *See—*
Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., 3,680,129.

Bhappu, Roshan B.: *See—*
O'Connor, Lawrence T.; Brierley, James A.; and Bhappu, Roshan B., 3,679,397.

Biazzo, Martin Robert; King, Bernard George; and Ortel, William Charles Gormley, to Bell Telephone Laboratories, Incorporated. Acoustically absorbent mounting method for optical modulator. 3,678,574, Cl. 29-592.000.

Bicicchi, Vincent A., to Woolley, W. J., Co. Door with double-inflatable seal and pressure chamber. 3,678,624, Cl. 49-68.000.

Bickel, John E.; Freres, Clemens H.; Gossard, Earl E.; Britt, James E.; Ortwein, Norman R.; and Swanson, Eric R., to United States of America, Navy. Very low frequency location finding system. 3,680,115, Cl. 343-105.00r.

Biecker, George A.: *See—*
Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., 3,680,129.

Bielle, Eugene. Multi-purpose watering equipment. 3,679,138, Cl. 239-267.000.

Binks, Dennis C.: *See—*

Arulpragasam, Jeganandaraj A.; Binks, Dennis C.; Holmes, John J.; Minshull, John F.; Pinnell, Martin C.; and Williams, Clive, 3,680,052.

Binzer, Thomas J., to General Electric Company. Protective barriers for window of microwave oven door. 3,679,855, Cl. 219-10.550.

Biometrics, Inc.: *See*—
Newman, Joel S.; and Jernigan, Marvin E., 3,679,295.

Birke, Walter: *See*—
von der Eltz, Hans-Ulrich; Birke, Walter; Kunze, Wolfgang; Taunus, Hofheim; and Schon, Franz, 3,679,349.

Birnbaum, Hermann, to Caravan Products Co., Inc. Conditioner for baked goods. 3,679,430, Cl. 99-90.0cb.

Bishop, Walton B., to United States of America, Navy. Non-main beam reflected IFF interrogation rejector. 3,680,090, Cl. 343-6.5lc.

Bison Instruments, Inc.: *See*—
Grangaard, Orrin H., Jr.; and Selig, Ernest T., 3,678,739.

Bissett-Berman Corporation, The: *See*—
Pinto, James J., 3,680,063.

Biswell, Charles B.; and Johnston, Thomas F., to Du Pont de Nemours, E. I., and Company. Pour improvers for fuel oils. 3,679,380, Cl. 44-62.000.

Bixby, Leo A., to North American Rockwell Corporation. Vehicle provided with four wheel drive system. 3,679,016, Cl. 180-44.000.

Bjorkegren, Lars Gstaf. Roll press comprising two dissimilar rolls with equal deflection characteristics. 3,678,846, Cl. 100-155.00r.

Bjorklund, Lowell L., to Illinois Tool Works Inc. Sealing washer. 3,678,979, Cl. 151-37.000.

Black, James A.: *See*—
Black, James A.; and Farwell, Harry Russell, 3,679,112.

Black, James A.; and Farwell, Harry Russell, to Black, James A. Vacuum belt guiding means. 3,679,112, Cl. 226-33.000.

Black, James R.; and Gurev, Harold S., to Motorola, Inc. Vertical resistor. 3,680,028, Cl. 338-308.000.

Blackburn, Bobby J. Method and apparatus for determining unbalance. 3,678,761, Cl. 73-457.000.

Blair, George R.; and Keller, Sherman R., to Hughes Aircraft Company. Method of electropolishing molybdenum. 3,679,559, Cl. 204-140.500.

Blanchard, Byron E.: *See*—
Westcott, Vernon C.; Blanchard, Byron E.; Davis, Paul A.; and Prevot Stephane, 3,678,742.

Bland, Ray A.: *See*—
Dickey, Clyde W.; and Bland, Ray A., 3,678,720.

Blatchford, John K.; Peterson, Edward C.; and Burda, Jan C., to Whirlpool Corporation. Method of making a heating element. 3,679,473, Cl. 117-212.000.

Blatter, Albert, to Bendix Corporation, The. Fluidic viscometer. 3,678,733, Cl. 73-54.000.

Blattner, Raymond J., to Dresser Industries, Inc. Torque measuring hand screwdriver. 3,678,743, Cl. 73-139.000.

Blech, Joab J., to Ford Motor Company. Gas turbine ceramic regenerator. 3,678,991, Cl. 165-9.000.

Blessin, Ronald W.; and Kennedy, James A., to Honeywell Information Systems Inc., mesne. Apparatus for maintaining character synchronization in a data communication system. 3,680,051, Cl. 340-172.500.

Blessin, Ronald W.; and Kennedy, James A., to Honeywell Information Systems, Inc. Data communications subchannel. 3,680,057, Cl. 340-172.500.

Blickstein, Martin J.: *See*—
Newman, Richard J.; Mittler, Martin A.; and Blickstein, Martin J., 3,679,940.

Blitchington, Frank H., Jr., to Western Electric Company, Incorporated. Apparatus for controlling the intensity of radiant energy on a strip. 3,679,903, Cl. 250-83.3uv.

Block, Aleck, to Merit Abrasive Products, Inc. Abrasive pack with anchor assembly. 3,678,633, Cl. 51-337.000.

Bloomquist, Evert V.; and Bloomquist, Gerald E. Key lock assembly for a pair of relatively movable members. 3,679,246, Cl. 287-52.050.

Bloomquist, Gerald E.: *See*—
Bloomquist, Evert V.; and Bloomquist, Gerald E., 3,679,246.

Blaw-Knox Foundry & Mill Machinery, Inc.: *See*
Feuer, Michael M.; and Kotler, Richard G., 3,679,150.

Blum, Arthur B.: *See*—
Davis, James R.; and Blum, Arthur B., 3,678,978.

Blumenkranz, James J.: *See*—
Wise, Eugene H.; and Blumenkranz, James J., 3,678,634.

Boari, Gianfranco; Liberti, Lorenzo; Merli, Carlo; and Passino, Roberto, to Consiglio Nazionale Delle Ricarche. Process for the deionization of aqueous saline solutions. 3,679,580, Cl. 210-26.000.

Bobst, J., & Fils, S.A.: *See*—
Boujon, Gerard, 3,679,316.

Bodre, Robert J.: *See*—
Benson, Royal H.; and Bodre, Robert J., 3,679,366.

Boettcher, Richard W. Jack or lift mechanism and drive therefor. 3,679,174, Cl. 254-45.000.

Bogle, David M., to Ford Motor Company. Rotatable plate and impact means for scrap fragmentizing machine. 3,679,144, Cl. 241-300.000.

Bogren, Hugl; Elfstrom, Gosta; and Tengroth, Bjorn, to Incentive Research and Development AB. Device for simultaneous radiographical and photographical examinations on the eye and the orbital region. 3,679,901, Cl. 250-59.000.

Bohorquez, Luis; and Vindez, Pierre G., to Zephyr Manufacturing Co., Inc. Portable right angle drill. 3,679,320, Cl. 408-99.000.

Boise Cascade Corporation: *See*—
Ehrensing, Alvin T.; and Taylor, Clement R., 3,678,890.

Boissier, Jacques Robert: *See*—
Ratouis, Roger; and Boissier, Jacques Robert, 3,679,802.

Bolduan, Dieter: *See*—
Markewitz, Wolfgang; and Bolduan, Dieter, 3,678,693.

Bolduc, Berthelemi J. Paper cutting apparatus. 3,678,581, Cl. 30-294.000.

Bollinger, William C., to Detroit Flame Hardening Co. Method forming clad plates from curved surfaces. 3,679,858, Cl. 219-76.000.

Boltz, Charles D., Jr., to RCA Corporation. Optical apparatus for continuous television film projection system. 3,679,827, Cl. 178-7.00.

Bomberger, Howard B., Jr.; and Seagle, Stanley R., to RMI Company, mesne. Method of improving macrostructure of titanium-base alloy products. 3,679,403, Cl. 75-175.500.

Bondarenko, Fedor Alexeevich: *See*—
Rubinshtein, Sholom Yakovlevich; Babin, Mikhail Artemievich; Gutman, Anatoly Lvovich; Naumenko, Viktor Dmitrievich; Orlov, Evgeny Mikhailovich; Presman, Vladimir Alexandrovich; Maev, Veniamin Evnovich; and Bondarenko, Fedor Alexeevich, 3,678,664.

Bonelli, Giovanni. Process for alum cracking and the so obtained products. 3,679,361, Cl. 23-121.000.

Bonner, William Adam; Singh, Shobha; and Van Uitert, Le Grand Gerard, to Bell Telephone Laboratories, Incorporated. Lithium formate nonlinear devices. 3,679,907, Cl. 307-88.300.

Bonnet, Jean-Loup, to Schlumberger Technology Corporation. Magnetic suspension densimeter including means to vary float volume and weight. 3,678,760, Cl. 73-453.000.

Bonsky, Elmer C., to T.A.D. Avanti, Inc. Multi-line coupling system. 3,679,831, Cl. 179-2.00c.

Boothe, Willis A.; and Healey, Anthony J., to General Electric Company. Fluidic lead-lag frequency responsive circuit. 3,678,953, Cl. 137-81.500.

Borcherding, Karl, to Heye, Hermann. Honing apparatus. 3,678,630, Cl. 51-58.000.

Borden, Gavin Gale: *See*—
Ludwig, Frederic G., 3,679,302.

Borden Inc.: *See*—
Sandler, Stanley Robert, 3,679,700.
Sorell, Henry P.; Pomazak, Eugene; and Rygg, Sven, 3,679,458.
Stine, Orrin Burr, 3,679,110.

Borg-Warner Corporation: *See*—
Szucs, Robert J., 3,678,519.

Borisov, Vasily Semenovich: *See*—
Kulikov, Ivan Vladimirovich; Borisov, Vasily Semenovich; and Treschev, Viktor Georgievich, 3,678,999.

Bosc, Henri J., to International Standard Electric Corporation. Circuits eliminating large clutter echoes. 3,680,096, Cl. 343-7.700.

Bosch, Robert, G.m.b.H.: *See*—
Scholl, Hermann; Norbert, Stuttgart; Gansert, Willi; and Arnold, Herbert, 3,678,904.
Schulten, Reinhard; and Michel, Hartmut, 3,679,517.
Zimmermann, Kurt; and Gemander, Georg, 3,678,913.

Bosworth, George: *See*—
Eggleston, Gerard; and Bosworth, George, 3,678,753.

Botts, John C.: *See*—
Simmonds, Leonard B.; and Botts, John C., 3,679,926.

Boujon, Gerard, to Bobst, J., & Fils, S.A. Method and apparatus for optically positioning printing plates. 3,679,316, Cl. 356-168.000.

Boulanger, Gilbert; and Samoel, Alain, to Commissariat a l'Energie Atomique. Installation for ultrasonic testing. 3,678,735, Cl. 73-67.700.

Boulter, Thomas W.: *See*—
Wesson, Jerry J.; and Boulter, Thomas W., 3,678,859.

Bowman Enterprises, Inc.: *See*—
Bowman, Vernon D., 3,678,869.

Bowman, Mark M., Jr., to Phillips Petroleum Company. Repelling of marine animal pests. 3,679,466, Cl. 117-127.000.

Bowman, Vernon D., to Bowman Enterprises, Inc. Air heater and exhaust gas diluting apparatus for incinerator. 3,678,869, Cl. 110-8.00r.

Boyd, Reed L. Rotating disc scraper. 3,678,532, Cl. 15-236.000.

Boyer, Joseph M. Tunable radio antenna. 3,680,135, Cl. 343-742.000.

Boylan, Jack B.; and Sturwold, Robert J., to Emery Industries, Inc. Flexibilized phenol-formaldehyde resins. 3,679,617, Cl. 260-19.00r.

Boyte, Jack D. Golf club swing training aid. 3,679,214, Cl. 273-189.00r.

Bozich, Robert A. Compressor clutch with time delay control. 3,678,700, Cl. 62-323.000.

Bradbury, Keith Douglas. Apparatus for pulling row crops. 3,679,002, Cl. 171-56.000.

Brake, Loren D., to Du Pont de Nemours, E. I., and Company. Isomer enrichment of bicyclohexyl-4,4-diamine. 3,679,746, Cl. 260-563.00r.

Brameda Resources Limited: *See*—
Tisdel, Lawrence C.; and Scott, Harry B., 3,679,371.

Bramson Instruments, Incorporated: *See*—
Horton, Robert C., 3,679,526.

Brandli, Paul: *See*—
Zuhlke, Gerhard; Brandli, Paul; and Spalti, Max, 3,678,550.

Brasco S.A.: *See*—
Asper, Jean-Jacques, 3,679,052.

Braun, Edwin Julius; Maxon, Rodney Robert; Meise, Henry August, Jr.; Taylor, George William; and Witmore, Ronald Kirk, to Bell Telephone Laboratories, Incorporated. By link circuit. 3,679,834, Cl. 179-18.00c.

Braun, Richard E.; Hopkins, Lionel G.; Sheehan, Neil J.; and Sanchez, Edward J., to Magnetic Head Corporation. Method of manufacturing multiple track, single gap magnetic heads. 3,678,576, Cl. 29-603.000.

Bray, John R.; and McKinney, Perry F., to Monsanto Company. Stabilizing circuit for anticipating controller. 3,679,873, Cl. 219-501.000.

Brendgord, Thomas; and Kereluk, Karl, to American Sterilizer Company. Portable isolator. 3,678,921, Cl. 128-1.00r.

Brennan, John F.: *See*—
Lester, George R.; and Brennan, John F., 3,679,704.

Breslow, Jeffrey D., to Glass, Marvin, & Associates. Board game apparatus. 3,679,210, Cl. 273-134.00c.

Bresser, Thomas G. Golf club carrier or cart. 3,679,226, Cl. 280-47.190.

Breunich, Theodore R.: *See*—
Di Noia, Emanuel J.; and Breunich, Theodore R., 3,678,750.

Bridgestone Tire Company Limited: *See*—
Watanabe, Shigeo; Sogi, Toshiyuki; and Mukai, Tsuneo, 3,678,982.

Brierley, James A.: *See*—
O'Connor, Lawrence T.; Brierley, James A.; and Bhappu, Roshan B., 3,679,397.

Bright, James A., to General Motors Corporation. Hydraulic thermostat. 3,680,022, Cl. 337-315.000.

Brinkmann, Ludwig; and Herwig, Walter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Thermoplastic polyester moulding compositions containing boron nitride. 3,679,628, Cl. 260-45.7ps.

Brinks, Floyd J.; Day, Lucian P., Jr.; and Jones, Jerry L., to Pullman Incorporated. Roof structure for railway cars. 3,678,867, Cl. 105-377.000.

Brissey, Charles David; and Trotter, Marvin Nathaniel, to Stevens, J. P., & Co., Inc. Quill or bobbin spinning and winding frame with semi-automatic doffing and donning. 3,678,672, Cl. 57-52.000.

Bristol, Bertram W. Grinding apparatus. 3,679,141, Cl. 241-106.000.

Bristol, John E., to Du Pont de Nemours, E. I., and Company. Preparation of polyvinyl alcohol having improved color properties by treating the polyvinyl ester with an alkali metal borohydride. 3,679,646, Cl. 260-91.3pv.

Bristol, John E., to Du Pont de Nemours, E. I., and Company. Preparation of polyvinyl alcohol having improved color properties by treating the polyvinyl ester with magnesium metal. 3,679,647, Cl. 260-91.3pv.

Bristol, John E., to Du Pont de Nemours, E. I., and Company. Preparation of polyvinyl alcohol having improved color properties by treating the polyvinyl ester with an alkaline earth metal hydride. 3,679,648, Cl. 260-91.3pv.

Bristol-Myers Company: *See*—
Essery, John Michael, 3,679,663.

British Iron and Steel Research Association, The: *See*—
Davies, Gordon Idris; Killay, Swansea; and Williams, Terence, 3,678,888.

British Titan Products Company Limited: *See*—
Brook, David Whiteley; and Ward, Raymond, 3,679,721.

Britt, James E.: *See*—
Bickel, John E.; Freres, Clemens H.; Gossard, Earl E.; Britt, James E.; Ortwein, Norman R.; and Swanson, Eric R., 3,680,115.

Brocbman, Henry J.; and Sandor, Bela, to General Motors Corporation. Closure latch. 3,679,251, Cl. 292-216.000.

Bronstein, Harry. Circumcision clamp. 3,678,935, Cl. 128-325.000.

Brook, David Whiteley; and Ward, Raymond, to British Titan Products Company Limited. Titanium compounds. 3,679,721, Cl. 260-429.500.

Brook, James H. T.; and Williams, Joyce, to Shell Oil Company. Lubricant compositions. 3,679,585, Cl. 252-51.50a.

Brooks, Rodney A.; and Orlando, Vincent A., to General Motors Corporation. Acceleration sensor. 3,678,763, Cl. 73-514.000.

Broome, Marshall B.; and Burress, William W., to Atlantic Richfield Company. Digital waveform generator with adjustable time shift and automatic phase control. 3,679,971, Cl. 324-.50b.

Brorson, Donald L.; and Magnuson, Raymond A., to Beatrice Foods Co. Molded plastic garment hanger. 3,679,100, Cl. 223-88.000.

Brown, Claude W., to United States of America, Navy. Digital target acquisition system. 3,680,093. Cl. 343-7.0ed.

Brown, Frederick G., to Lever Brothers Company. Dyeing human hair with a peroxy compound and a reactive dyestuff. 3,679,347, Cl. 8-10.100.

Brown, James Marvin, to American Cyanamid Company. Non-yellowing softening agent for cotton and rayon textiles. 3,679,719, Cl. 260-400.000.

Brown, Melancthon S., to Chevron Research Company. N-polyhalovinylthiocarboxamides. 3,679,673, Cl. 260-239.300.

Brown, Melancthon Starr; deceased (by Kohn, Gustave; administrator), to Chevron Research Company. N-substituted arylcarbamoyl sulfides. 3,679,733, Cl. 260-479.00c.

Brown, Roger S.: *See*—
Rhodes, Philip L.; and Brown, Roger S., 3,678,537.

Brown, William A.; and Earnest, Eugene P. Pipe perforating machine. 3,678,718, Cl. 72-71.000.

Brown, William E.; Heitz, Robert G.; and Levine, Charles A., to Dow Chemical Company, The. Electrical cell assembly. 3,679,480, Cl. 136-6.000.

Bruhwiler, Othmar; and Egloff, Anton, to Fischer, Georg AG. Shedding motion for a weaving machine. 3,678,967, Cl. 139-35.000.

Bruninghans Hydraulik GmbH: *See*—
Riedhammer, Josepf; and Glaser, Fritz-Jorg, 3,679,327.

Brunn, Theodore F., to Schlumberger Technology Corporation. Methods and apparatus for recording well logginng data. 3,680,042, Cl. 340-18.000.

Brunnee, Curt; and Bultemann, Hans-Joachim. Separating device for mixtures of gaseous or vaporous substances, especially for separating a carrier gas from a fraction to be analyzed in a combined gaschromatograph and mass-spectrometer. 3,678,656, Cl. 53-197.000.

Brunswick Corporation: *See*—
Roberts, John A.; and King, Alwyn H., 3,678,564.

Brunswick Corporation, mesne: *See*—
Clark, Raymond C.; and Ziebell, Donn G., 3,679,271.

Bryant, Kenneth Owen; Morrow, William R.; and Logue, Vernon J., to United States of America, Navy. Recursive integrator. 3,680,088, Cl. 343-5.0dp.

Bryant, Marion B.; and Hunt, Barry R., to United States of America, Navy. Luneberg lens ECM apparatus. 3,680,123, Cl. 343-113.00r.

Bryant, Richard W.; and Tu, George K., to Cogar Corporation. Integrated circuit system having single power supply. 3,679,917, Cl. 307-297.000.

Bucher, Foster L.: *See*—
Anderson, William S.; and Bucher, Foster L., 3,679,050.

Buck, Barry L. Mixing and dispersing device. 3,679,323, Cl. 416-183.000.

Buck, Daniel C., to Westinghouse Electric Corporation. Ferrite waveguide phase shifter exhibiting negative phase shift. 3,680,010, Cl. 333-31.00a.

Buck, Keith E., to United States of America, Atomic Energy Commission. Modified stirling cycle engine-compressor having a freely reciprocable displacer piston. 3,678,686, Cl. 60-24.000.

Buck, Robert E.; Metzger, Robert W., Jr.; Rittmann, Albert D.; and Sayers, Eugene H., to General Motors Corporation. Strip mounted semiconductor device. 3,679,946, Cl. 317-234.00r.

Buckler, Sheldon A.; Milligan, Terry W.; and Rogers, Howard G., to Polaroid Corporation. Color diffusion transfer processes and elements for use thereon with incorporated image-forming material impermeable layer. 3,679,409, Cl. 96-3.000.

Bucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, to Roussel Uclaf. Novel 7α-methyl-Δ-gonadienes. 3,679,718. Cl. 260-397.450.

Budan, Gerhard: *See*—
Hartmann, Hellmut; and Budan, Gerhard, 3,679,362.

Buecheler, Paul; and Mueller, Fred to Sandoz Ltd. Esters of 2-(β-car-(boxyethyl) amino-3,4-phthaloyl-benzarocridone benzacridome. 3,679,685, Cl. 260-276.000.

Buehler, William J., to United States of America, Navy. Method for casting high T content alloys. 3,679,394, Cl. 75-10.000.

Buitelaar, Arnold A.: *See*—
van der Meij, Pieter H.; and Buitelaar, Arnold A., 3,679,644.

Bullivant, Kenneth W., to K-Tron Corporation. Digitally controlled mass flow feeder and weight integrator. 3,679,010, Cl. 177-16.000.

Bullock, Michael K.; Miller, Myrl J.; and Voit, William F., Jr., to International Business Machines Corporation. Balance type toner concentration sensing and monitoring system. 3,679,099, Cl. 222-55.000.

Bullock, Milon Walker, to American Cyanamid Company. Method of preparing dl 6-phenyl-2,3,5,6-tetrahydroimidazo [2,1-b]-thiazole hydrochloride. 3,679,696, Cl. 260-306.700.

Bullock, Milon Walker, to American Cyanamid Company. Compound ((β-hydroxyphenethyl)amino)ethyl thiocyanate and acid addition salts thereof. 3,679,725, Cl. 260-454.000.

Bultemann, Hans-Joachim: *See*—
Brunnee, Curt; and Bultemann, Hans-Joachim, 3,678,656.

Bumbalek, Karel; and Olser, Ladislav, to Zavody Presneho strojirenstvi Gottwaldow narodni podnik. Shaping machine for shoe uppers. 3,678,522, Cl. 12-8.100.

Bunker, William H.; Kerr, John W.; Mitrofanoff, Nicholas S.; and Swearingen, Kent W., to International Business Machines Corporation. Input/output channel. 3,680,054, Cl. 340-172.500.

Bunker-Ramo Corporation, The: *See*—
Chow, Weichien; and Provinsky, Jerry, 3,680,034.

Burch, John L., to United States of America, National Aeronautics and Space Administration. Two-speed drive system. 3,678,771, Cl. 74-217.000.

Burd, Thomas A., to Square D Company. Rotatably reversible connector for electric circuit breaker. 3,679,854, Cl. 200-166.0bh.

Burda, Jan C.: *See*—
Blatchford, John K.; Peterson, Edward C.; and Burda, Jan C., 3,679,473.

Burgess, Anthony Joseph; Eagles, Alan Charles; and Steel, Margaret Lillian, to Imperial Chemical Industries Limited. Transfer coating process. 3,679,506, Cl. 156-209.000.

Burgess, James F.; Kopczewski, Robert F.; and Holeman, John M., to General Electric Company. Method and apparatus for opti cal projection of deformation images. 3,679,299, Cl. 353-67.000.

Burgoon, Richard J., to Westinghouse Electric Corporation. Voltage indicator for high voltage switchgear. 3,680,071, Cl. 340-248.00r.

Burke, Edward F., Jr., to Polaroid Corporation. System for processing photographic material. 3,678,841, Cl. 95-89.00r.

Burkhart, Clark B., to AMBAC Industries, Incorporated. Filter leaf and method of making the same. 3,679,062, Cl. 210-486.000.

Burkholder, Charles R. Portable ball washer. 3,678,526, Cl. 15-97.00r.

Burley, Harvey A., to General Motors Corporation. Engine combustion monitor. 3,678,741, Cl. 73-116.000.

Burley, Maurice N. Garbage can lid holding device. 3,679,162, Cl. 248-156.000.

Burlington Industries, Inc.: *See—*
Backer, Leonard N., 3,678,516.
McGee, James Newton; and Griffin, Thomas Franklin, 3,679,516.

Burress, George T.; and Willis, James L., Jr., to Mobil Oil Corporation. Purifying and milling terephthalic acid. 3,679,741, Cl. 260-525.000.

Burress, William W.: *See—*
Broome, Marshall B.; and Burress, William W., 3,679,971.

Burroughs Corporation: *See—*
De Santis, Alfred J.; Beers, Le Roy W.; White, James A.; and Moysey, John A., 3,680,058.
Fussell, Richard L., 3,679,969.
Jorgensen, Arnold J.; Bewley, Lawrence L.; and White, Kenneth H., 3,680,005.
Wilson, Roy A., 3,680,055.

Busby, Samuel J. Weighted whirling type exercising device. 3,679,204, Cl. 272-81.000.

Buscher, Judy G. Face mask. 3,678,929, Cl. 128-146.600.

Buschman, Elmer W., 2/3% to Buschman, Kenneth, and 1/3% to Price, William R. Electrostatic precipitator. 3,678,653, Cl. 55-2.000.

Buschman, Kenneth, and 1/3% to Price, William R.: *See—*
Buschman, Elmer W., 3,678,653.

Bushnell, Eldon W.: *See—*
Mulcahy, Harry W.; Bushnell, Eldon W.; and Kaim, John W., 3,679,028.

Butler, Kenneth, to Pfizer Inc. Aryl esters of α-carboxyarylmethylpenicillins. 3,679,801, Cl. 424-271.000.

Butter, Karl, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Arrangement of cooling channels for rocket engine combustion chambers. 3,678,802, Cl. 90-11.00c.

Buus, Robert George, to Bell Telephone Laboratories, Incorporated. Pulsed two-tone test signal generator for linear amplifiers. 3,679,984, Cl. 330-2.000.

Buzano, Michel, to Societe Rhodiaceta. Process for the manufacture of high-bulk yarn. 3,678,549, Cl. 28-72.12.

Byxbee, Crawford Ralph: *See—*
United States of America, National Aeronautics and Space Administration, 3,678,685.

Cadiou, Jean Georges, to Societe Anonyme Automobiles Citroen. Seat comprising independently mounted blocks of deformable elastic padding. 3,679,263, Cl. 297-456.000.

Calgon Corporation: *See—*
Rivers, Hubert M., 3,679,543.

California Pellet Mill Company: *See—*
Gilman, Robert W., 3,679,343.

Callaghan, Joseph C., to Canada, Her Majesty the Queen in the right of, as represented by the Minister of National Defence. Cable control system. 3,679,180, Cl. 254-172.000.

Callihan, Rudy B.: *See—*
Cockrell, Darryl W.; and Callihan, Rudy B., 3,678,998.

Calogero, William J.: *See—*
Negersmith, Kent M.; and Calogero, William J., 3,679,367.

Calvet, Francisco Vancells, to Hilados Y Tintes Soler, S.A. Procedure for the dyeing of textile ribbons. 3,679,356, Cl. 8-149.100.

Camdex, Inc.: *See—*
Leich, Robert A., 3,678,799.

Cameron, Gordon N. Hydraulically actuated chuck. 3,679,219, Cl. 279-1.00q.

Cammarata, Italo: *See—*
Vecchio, Martino; Cammarata, Italo; and Pattore, Vittorio, 3,679,767.

Campbell, Douglas Earl; and Harris, Richard Allen, to Western Electric Company, Incorporated. Method of partial shuttering for even exposure of photosensitive material. 3,679,310, Cl. 355-132.000.

Campbell, George Thomas Richardson; and Ohta, Kimio, to Algoship International Limited. Trimming pipe system for free-flowing cargoes. 3,678,875, Cl. 114-73.000.

Campbell, William W. Belt tightening tool. 3,679,176, Cl. 254-54.000.

Canada, Her Majesty the Queen in the right of, as represented by the Minister of National Defence: *See—*
Callaghan, Joseph C., 3,679,180.

Canada Packers Limited: *See—*
Donovan, Ross Grant; and Wolf, Stewart Franklin, 3,679,548.

Canadian Patents and Development Limited: *See—*
Menzies, Robert W., 3,679,924.

Canon Kabushiki Kaisha: *See—*
Inoue, Shozo, 3,679,301.
Mashimo, Yukio; and Ishikawa, Mitsuo, 3,678,828.
Takishima, Yoshiyuki, 3,678,835.

Canter, James A., to General Motors Corporation. Float actuated evaporator heater. 3,679,867, Cl. 219-272.000.

Capell, A. Earl; and Wilson, Leroy E., to Kimberly-Clark Corporation. Self bonded tissue-fiber laminate process. 3,679,515, Cl. 156-309.000.

Carabateas, Philip M., to Sterling Drug Inc. Certain N-(pyridyl)propionanilides. 3,679,690, Cl. 260-295.0am.

Caravan Products Co., Inc.: *See—*
Birnbaum, Hermann, 3,679,430.

Carcey, Jacques, to Commissariat a l'Energie Atomique. Die-furnace, especially for the fabrication of sintered products. 3,679,807, Cl. 13-27.000.

Carlson, Reuben C.: *See—*
Midgley, Edward L.; and Carlson, Reuben C., 3,679,980.

Carlson, William C. Plant cover. 3,678,619, Cl. 47-29.000.

Carothers, Charles H.; and Kelly, Robert M., to Westinghouse Electric Corporation. Electrical disconnector. 3,679,938, Cl. 317-61.000.

Carrano, Andrew J., Jr.; Cotsalas, Stephen N.; and Jacobson, John E., to Edu-Matic Designs, Ltd. Game apparatus for catching randomly moving articles. 3,679,208, Cl. 273-95.00r.

Carrillo, Gilberto, to Rohr Corporation. Method and composition for stripping structural adhesives and the like. 3,679,591, Cl. 252-142.000.

Carter, Cecil O.: *See—*
Hutson, Thomas, Jr.; and Carter, Cecil O., 3,679,771.

Carver, Fred F., to Singer Company, The, mesne. Simulated instruments. 3,679,880, Cl. 235-151.340.

Case, J. I., Company: *See—*
Jansson, Birger F., 3,679,027.

Castner, Charles S., to Schuyler Development Corporation. Cleaning and conditioning concentrate compositions. 3,679,609, Cl. 252-527.000.

Catalysts and Chemicals Inc.: *See—*
La Hue, Richard W.; and Smith, Nolan A., 3,679,762.
Livingston, Jimmy Y., 3,679,763.

Caterpillar Tractor Company: *See—*
Dadds, Floyd S.; and Gee, James E., 3,679,216.

Cattanach, Hamish A. G., to Applied Power Industries, Inc. Variable pressure sensitive pump. 3,679,328, Cl. 417-270.000.

C.A.V. Limited: *See—*
Dillon, Stanley Bernard; Mowbray, Dorian Farrar; and Kamp, Kenneth Albert Walters, 3,679,846.

Celanese Corporation: *See—*
Druin, Melvin L.; Loft, John T.; and Plovan, Steven G., 3,679,538.
Vogelfanger, Elliot A., 3,679,636.
Zimmerman, Daniel; and Wolfowitz, Stanley, 3,679,540.

Centofanti, Armando P. Balloon and parachute combination. 3,679,155, Cl. 244-32.000.

Central Specialties Co.: *See—*
Ballenger, William G., 3,679,160.

Cesenek, Bedrich: *See—*
Prochazka, Miloslav; Seidl, Karel; and Cesenek, Bedrich, 3,678,673.

Ceskoslovenska akademie ved: *See—*
Wichterle, Otto, 3,679,504.

Chakraverty, Benoy Kumar; and Plenier, Alain, to Agence Nationale de Valorisation de la Recherche (ANVAR). Metal-insulator-semiconductor structures. 3,679,947, Cl. 317-234.00r.

Chalfin, Gregory T.; Louapre, Merlin E.; and Olson, Richard C., to Aerojet-General Corporation. Scanning antenna having a circular lens with peripherally spaced linear arrays. 3,680,140, Cl. 343-754.000.

Chalk, Alan J.; and Factor, Arnold, to General Electric Company. Method for stabilizing polycarbonates and compositions made thereby. 3,679,629, Cl. 260-37.0pc.

Chamberlain, Meredith K.: *See—*
Krepps, James Edgar, Jr.; Chamberlain, Meredith K.; and Fisher, Robert D., 3,679,979.

Chambers, Worth L., to Sunbeam Corporation. Battery powered electric knife and charger-storage stand therefor. 3,679,958, Cl. 320-2.000.

Chang, Henry M., to First Dynamics, Inc. Combination food container and implement for extracting the contents. 3,679,093, Cl. 220-90.200.

Chang, Wen-Hsuan: *See—*
Dowbenko, Rostyslaw; and Chang, Wen-Hsuan, 3,679,564.

Chang, Yun Ger, to Reichhold Chemicals, Inc. Peroxides bearing gamma-lactone ring and method of making the same. 3,679,708, Cl. 260-343.600.

Chapman, Clifford Victor Gascoyne: *See—*
Wyatt, James Andrew Stewart; Chapman, Clifford Victor Gascoyne; Solt, George Stefan; and Mullet, Sidney George, 3,679,059.

Charbonnier, Gerard; and Gauthier, Gerard, to Compagnie Generale d'Automatisme. Storage battery monitoring apparatus. 3,680,072, Cl. 340-249.000.

Charle, Roger; Kalopissis, Gregoire; and Zviak, Charles, to L'Oreal. Aerosol composition and method for producing same. 3,679,102, Cl. 222-192.000.

Charles, James F., to Shur-Lok Corporation. Sectional sandwich panel insert with frictional telescopic coupling. 3,678,535, Cl. 16-2.000.

Charles River Foundation, The: *See—*
Merrill, Edward W., 3,678,756.
Merrill, Edward W., 3,679,625.

Charpente: *See—*
Duclaux, Daniel; Givry, Jean-Pierre; and Pointud, Jacky, 3,679,555.

Chase-Shawmut Company, The: *See—*
Kozacka, Frederick J., 3,680,019.

Chaussonnet, Pierre E.: *See—*
Van Impe, Jean; Chaussonnet, Pierre E.; and Rombaux, Jean-Pierre M., 3,679,378.

Chemech Engineering Ltd.: *See—*

Westerlund, Gothe O., 3,679,568.
Chemex Corporation: *See—*
Keeler, Richard A.; and Eckstein, Arthur, 3,679,869.
Chemical Construction Corporation: *See—*
Newman, Daniel J.; and Klein, Louis A., 3,679,549.
Chemische Werke Huls, A.G.: *See—*
Feinauer, Roland; Thier, Werner; and Schneider, Wolfgang, 3,679,468.
Chen, Godfrey: *See—*
Abbott, Dominic C.; and Chen, Godfrey, 3,678,942.
Chen, Philip L.; and Paradysz, Louis F., to Xerox Corporation. Optical system for projection recording apparatus. 3,678,820, Cl. 95-4.500.
Cheng, Chen Yen; and Cheng, Sing-Wang. Fractional solidification process with heat reuse by the application of pressure. 3,678,696, Cl. 62-58.000.
Cheng, Sing-Wang: *See—*
Cheng, Chen Yen; and Cheng, Sing-Wang, 3,678,696.
Chernoch, Joseph P., to General Electric Company. Laser cooling method and apparatus. 3,679,999, Cl. 331-94.500.
Chesler, Ronald Benjamin; and Maydan, Dan, to Bell Telephone Laboratories, Incorporated. Laser arrangement including a cavity defined by convex and concave mirrors. 3,680,000, Cl. 331-94.500.
Chessin, Hyman, to M & T Chemicals Inc. Novel composite. 3,679,381, Cl. 29-199.000.
Chevron Research Company: *See—*
Brown, Melancthon S., 3,679,673.
Brown, Melancthon Starr, 3,679,733.
Kohn, Gustave K., 3,679,734.
Stayner, Robert A., 3,679,857.
Chi, Dongsuk: *See—*
Lee, Hanju; and Chi, Dongsuk, 3,679,604.
Chicotka, Richard J., to International Business Machines Corporation. Method of polishing gallium phosphide. 3,679,501, Cl. 156-17.000.
Childress, James D.: *See—*
Rubin, Bernard; and Childress, James D., 3,679,360.
Chisso Corporation: *See—*
Hino, Hiroyuki; Asakuno, Hiroyoshi; and Yamada, Tetsuya, 3,678,545.
Chlebus, Rold: *See—*
Kretzschmar, Heinz; Chlebus, Rold; and Ochsner, Willi, 3,679,040.
Chmela, John F.; and Fohrman, Seymour F. Combination carrying handle and pour spout. 3,679,103, Cl. 222-192.000.
Cho, Masanobu, to Micro Seiki Co., Ltd. Moving coil type phonograph pickup cartridge. 3,679,843, Cl. 179-100.410.
Chock Full-O-Nuts Corporation: *See—*
Reich, Ismar M., 3,679,416.
Chong, Wilson. Pile borer. 3,679,008, Cl. 175-220.000.
Chow, Weichien; and Provinsky, Jerry, to Bunker-Ramo Corporation, The. Connector-universal. 3,680,034, Cl. 339-48.
Chow, Woo Foung, to Bell Telephone Laboratories, Incorporated. Domain propagation circuit. 3,680,067, Cl. 340-174.0tf.
Christ, Wilhelm; and Weissbach, Peter, to Then, Rudolf, Farbereimaschinenfabrik Gesellschaft mit beschrankter Haftung, Firma. Method for wet treatment of elongated textile material. 3,679,357, Cl. 8-152.000.
Christensen, Ferdinand. Strip material holder. 3,679,199, Cl. 269-254.00r.
Christy, Melvin G.: *See—*
Key, Robert L., III; and Christy, Melvin G., 3,678,939.
Chromalloy American Corporation: *See—*
Dabrush, Charles; and Strauss, Irving, 3,678,585.
Chromatix, Inc.: *See—*
Harris, Stephen E., 3,679,288.
Chrysler France: *See—*
Soubis, Jean-Pierre, 3,678,911.
Ciba Corporation: *See—*
Bencze, William Laszlo, 3,679,800.
Ciba-Geigy AG: *See—*
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,679,657.
Habermeier, Juergen; Batzer, Hans; and Porret, Daniel, 3,679,681.
Huber-Emden, Helmut; Eschle, Karl; and Maeder, Arthur, 3,679,779.
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Nachbur, Hermann; and Maeder, Arthur, 3,679,778.
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Anner, Georg; and Kalvoda, Jaroslav, 3,679,716.
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Heusler, Karl; and Fechtig, Bruno, 3,679,676.
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Knight, Donald V., 3,679,523.
Kuhnis, Hans Herbert; and Rolf, Denss, 3,679,799.
Morf, Max; Wenger, Markus; and Feisst, Jutta, 3,679,621.
Wasley, Jan W. F.; and Gruenfeld, Norbert, 3,679,687.
Cielaszyk, Edward F., to General Time Corporation. One-piece roller-impulse member for timepiece escapement. 3,678,683, Cl. 58-122.000.
Cincinnati Milacron Chemicals, Inc.: *See—*
Stapfer, Christian H.; and Racz, William B., 3,679,619.
Cincinnati Mine Machinery Company, The: *See—*
Krekeler, Claude B., 3,679,265.
Citizens and Southern National Bank, The: *See—*
Green, William E., Jr., 3,678,650.
Claes, Paul: *See—*
De Somer, Pierre; and Claes, Paul, 3,679,795.
Claeys, Daniel Alois: *See—*
Vrancken, Marcel Nicolas; and Claeys, Daniel Alois, 3,679,410.
Clancy, David, to Colgate-Palmolive Company. Packaging apparatus. 3,678,649, Cl. 53-124.00d.
Clark Equipment Company: *See—*
Orns, James L., 3,679,256.
Clark, Raymond C.; and Ziebell, Donn G., to Brunswick Corporation, mesne. Support for a fluidized bed. 3,679,271, Cl. 302-45.000.
Clark, Timothy M.; Shanfield, Henry; and Grunau, David L., to Polymetrics, Incorporated. Reverse osmosis water purifier. 3,679,055, Cl. 210-110.000.
Clark, William C.: *See—*
Houston, William L., Jr.; and Clark, William C., 3,679,765.
Clark, William Russell, to Eddystone Machinery Company. Wrapping rotating rolls of sheet material. 3,678,646, Cl. 53-14.000.
Clarke Floor Machine Company; division of: *See—*
Nise, Wilfred C.; and Lowder, Dale E., 3,678,524.
Clasby, David N.: *See—*
Hall, Roger D.; and Clasby, David N., 3,680,131.
Clayson N.V.: *See—*
De Coene, Frans J., 3,678,938.
Clayton, David Henry; and Karkalas, John. Wort production. 3,679,431, Cl. 99-52.000.
Clecak, Nicholas J.; and Cox, Robert J., to International Business Machines Corporation. Arsenic containing bisazide compounds. 3,679,670, Cl. 260-240.00g.
Clifford, Dennis A.: *See—*
Teal, James L.; Hamilton, Charles Eugene; and Clifford, Dennis A., 3,679,364.
Cliftronics, Inc.: *See—*
Ganowsky, Raymond J., 3,680,015.
Clocker, Edwin T., to Ashland Oil, Inc. Process suitable for preparing homogeneous emulsions. 3,679,182, Cl. 259-9.000.
Coakley, James L., to Abex Corporation. Method and apparatus for improved jet pipe valve. 3,678,951, Cl. 137-14.000.
Coast Catamaran Corporation: *See—*
Alter, Hobart L., 3,678,876.
Coathylene S.A.: *See—*
Korsgen, Hans Helmuth; and Weller, Wolfgang, 3,679,638.
Cobb, William R., to Westinghouse Electric Corporation. Latch mechanism for refrigerators freezers and the like. 3,678,716, Cl. 70-92.000.
Cockrell, Darryl W.; and Callihan, Rudy B., to Baker Oil Tools, Inc. Retrievable well packer. 3,678,998, Cl. 166-123.000.
Cogar Corporation: *See—*
Bryant, Richard W.; and Tu, George K., 3,679,917.
Cohen, Michel; Lavigne, Pierre; and Sauvagnac, Robert, to Commissariat a l'Energie Atomique. Radioisotope heat source boiler for power generators. 3,678,920, Cl. 126-344.000.
Cohen, Milton J. Syringe. 3,678,931, Cl. 128-220.000.
Cohen, Seymour. Supports for curtains, venetian blinds, and the like. 3,678,636, Cl. 52-39.000.
Cohrs, William E.; and Stroiwas, Edward, to Dow Chemical Company, The. Thickened fuel compositions and method and material for thickening same. 3,679,382, Cl. 44-7.00d.
Cole, Addison D.; and Smith, Roger S., to Adcole Corporation. Demand cardiac pacer with interference protection. 3,678,937, Cl. 128-419.00p.
Cole Manufacturing Company: *See—*
Hatcher, John c., 3,679,224.
Colgate-Palmolive Company: *See—*
Clancy, David, 3,678,649.
Gerecht, John Fred, 3,679,611.
Collard, Jacques Roger, to RCA Corporation. Support for electrical components and method of making the same. 3,678,995, Cl. 165-185.000.
Colliau, Frank. Reflective plastic coated trailer hitch ball. 3,679,234, Cl. 280-511.000.
Collings, Rupert H., to United States of America, Navy. Current sheet antenna. 3,680,136, Cl. 343-746.000.
Collins Radio Company: *See—*
Huntsinger, Dean P., 3,680,097.
Rutherford, Kenneth R.; and Strebe, Arthur C., 3,680,091.
Collinson, Alfred Edward: *See—*
Betts, Colin; and Collinson, Alfred Edward, 3,678,963.
Colson, William B.; Niedermiller, Herbert C.; and Deradoorian, Bagdasar, to Bendix Corporation, The. Method for forming a honeycomb structure. 3,679,384, Cl. 65-4.000.
Colt Industries Operating Corporation, mesne: *See—*
Mello, William R.; and Warren, James A., 3,678,572.
Columbia Broadcasting System, Inc.: *See—*
Goldmark, Peter C., 3,679,817.
Colvin, Alex D.; McNitt, David H.; and Turner, Allen H., to Ford Motor Company. Method for increasing the output of an electron accelerator. 3,679,930, Cl. 315-21.00r.
Comeau, Raymond J. Spot welding tool. 3,679,859, Cl. 219-90.000.
Commercial Shearing & Stamping Company: *See—*
Haspert, John C., 3,678,694.
Commercon, Jean Claude; and Berthier, Guy. Method and device for measuring the thickness of a metal deposit on an insulating support. 3,679,968, Cl. 324-34.0tk.
Commissariat a l'Energie Atomique: *See—*

Boulanger, Gilbert; and Samoel, Alain, 3,678,735.
Carcey, Jacques, 3,679,807.
Cohen, Michel; Lavigne, Pierre; and Sauvagnac, Robert, 3,678,920.
Costa, Charles; Loupere, Andre; Monsel,Philippe; and Schmitt, Bertrand, 3,679,272.

Commonwealth Oil Refining Company, Inc.: *See—*
McDonald, Gerald W. G., 3,679,576.

Compagnia Italiana Westinghouse Freni e Segnali: *See—*
Nardi, Giancarlo, 3,679,185.

Compagnie de Saint-Gobain: *See—*
Malburet, Rene A., 3,679,073.

Compagnie Generale d'Automatisme: *See—*
Charbonnier, Gerard; and Gauthier, Gerard, 3,680,072.

Compagnie Pechiney et Electrification: *See—*
Duclaux, Daniel; Givry, Jean-Pierre; and Pointud, Jacky, 3,679,555.

Compton, Dinsdale M. J.; and Epstein, Barry D., to Gulf Oil Corporation. Phenol monitoring method and apparatus. 3,679,898, Cl. 250-43.50r.

Conical Containers Company (Proprietary) Limited: *See—*
Van Manen, Jacob Teunis Teunissen, 3,678,814.

Conley, Kenneth E.; and Ellison, Thomas M., to Riegel Paper Corporation. Weather resistant moldable laminate. 3,679,510, Cl. 156-245.000.

Conrady, James A.; and Fitzpatrick, John S., to Goodrich, B. F., Company, The. Sand core and mold compositions containing glycerine and an ammonium salt. 3,679,703, Cl. 260-33.40r.

Consiglio Nazionale Delle Ricarche: *See—*
Boari, Gianfranco; Liberti, Lorenzo; Merli, Carlo; and Passino, Roberto, 3,679,580.

Continental Can Company, Inc.: *See—*
Dike, Roy W., 3,679,785.
Morgese, Nicholas V., 3,679,121.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Pusch, Dietrich, 3,679,158.

Continental Rubber Works: *See—*
Malutich, William J., 3,679,345.

Control Data Corporation: *See—*
Graham, Walton; and Keegan, Robert R., 3,680,122.

Cook, Elton S.; and Nutini, Leo G., to Stanley Drug Products, Inc. Method of raising the white blood cell count. 3,679,793, Cl. 424-95.000.

Cooper, Bernard, to International Telephone and Telegraph Corporation. Angular modulation direction finding receiver. 3,680,125, Cl. 343-115.000.

Copeland, John Alexander, III, to Bell Telephone Laboratories, Incorporated. Single wall domain fanout circuit. 3,680,066, Cl. 340-174.0tf.

Copley, Stephen M.: *See—*
Tien, John K.; and Copley, Stephen M., 3,678,988.

Copping, Keith Philip. Injection moulded plastic cup-like article. 3,679,119, Cl. 229-1.500.

Corderoy, Henry M., to A. C. I. Operations Pty., Limited. Packaging of bottles or other articles. 3,678,647, Cl. 53-14.000.

Corey, Victor B., to Sundstrand Data Control, Inc. Fluidic sensor for fluid stream velocity. 3,678,746, Cl. 73-194.00r.

Corlite Corporation: *See—*
Fredericks, Carl K., 3,678,558.

Cormany, Charles L.; and Spotts, John A., Jr., to PPG Industries, Inc. Solvent bleaching. 3,679,590, Cl. 252-104.000.

Cornell Aeronautical Laboratory, Inc.: *See—*
Schneeberger, Richard F., 3,678,759.

Cornish Containers, Inc.: *See—*
Cornish, Edward; and Liebherr, Harold R., 3,678,703.

Cornish, Edward; and Liebherr, Harold R., to Cornish Containers, Inc. Cold storage carton. 3,678,703, Cl. 62-371.000.

Corrigan, Matthew J., Jr.; deceased (by Corrigan, Sandra Lee; executrix), to Electronic Products Corporation. Differential time television system. 3,679,823, Cl. 178-6.6dd.

Corrigan, Sandra Lee: *See—*
Corrigan, Matthew J., Jr., 3,679,823.

Corson, Frederick P., to Dow Chemical Company, The. Curable compositions comprising a polyepoxide, a polyisocyanato silane and a catalyst therefor. 3,679,630, Cl. 260-47.0en.

Costa, Charles; Loupere, Andre; Monsel,Philippe; and Schmitt, Bertrand, to Commissariat a l'Energie Atomique. Automatic alignment bearings for guiding in translational or rotational motion. 3,679,272, Cl. 308-9.000.

Cotsalas, Stephen N.: *See—*
Carrano, Andrew J., Jr.; Cotsalas, Stephen N.; and Jacobson, John E., 3,679,208.

Cottle, John E.: *See—*
Hinton, Robert A.; and Cottle, John E., 3,679,764.

Cotton, Incorporated, mesne: *See—*
Vehe, Dennis A.; Porterfield, Jay G.; and Roth, Lawrence O., 3,679,132.

Cotton, John Michael; and Lloyd, Peter Anthony, to Plessey BTR Limited. Data transmission systems. 3,680,053, Cl. 340-172.500.

Coulter Electronics, Inc.: *See—*
Figueroa, David R., 3,679,884.

Coulter, Stanley M.; and Mevissen, Ernst A., to Dravo Corporation. Nose ring for metallurgical processing vessels. 3,679,195, Cl. 266-35.000.

Cox, Robert J.: *See—*
Clecak, Nicholas J.; and Cox, Robert J., 3,679,670.

Coyle, Jan R. Thermal battery with percussion cap. 3,679,487, Cl. 136-90.000.

Cramazou, Etienne: *See—*
Friederich, Claude; and Cramazou, Etienne, 3,679,280.

Crane Canada Limited: *See—*
Lennon, Andrew Gordon, 3,678,767.

Cravits, Phillip, to London, Arnold B., mesne. Escalator cleaning apparatus. 3,678,533, Cl. 15-302.000.

Creasy, James R.: *See—*
Winters, Hilary M.; and Creasy, James R., 3,679,970.

Cremeans, George E., to Battelle Development Corporation, The. Alkali metal salts of polyacetylenic polyoic acids. 3,679,738, Cl. 260-485.00r.

Cricchi, James R., to Westinghouse Electric Corporation. Resettalbe non-volatile memory utilizing variable threshold voltage devices. 3,680,062, Cl. 340-173.00r.

Crick, Roger Dudley Salway, to English Electric Company Limited, The. Laminated structures. 3,679,527, Cl. 161-5.000.

Cronkhite, Leonard W., Jr.: *See—*
Merrill, Edward W., 3,678,756.
Merrill, Edward W., 3,679,625.

Crosby, Gerald E.; and Shanefield, Daniel J., to Western Electric Company, Incorporated. Method for bonding a metal pattern to a substrate. 3,679,472, Cl. 117-212.000.

Crowell, Merton Howard, to North American Philips Corporation. Solid state image sensing device. 3,679,826, Cl. 178-7.100.

Croyle, Jack V.: *See—*
Swett, James B.; and Croyle, Jack V., 3,679,088.
Swett, James B.; and Croyle, Jack V., 3,679,089.

Csupor, Denis D. A., to Maierform Holding S.A. Passive stabilisation tanks. 3,678,877, Cl. 114-125.000.

Culik, Rudolf; and Schneider, Jurg A., to Du Pont de Nemours, E. I., and Company. Composition comprising arylaminooxazoline and antichloligeneric agent. 3,679,798, Cl. 424-265.000.

Cupler, John A., II. Adjustable vee bearing. 3,679,273, Cl. 308-36.000.

Cutler-Hammer, Inc.: *See—*
Becker, Albert H.; Hart, Joseph M.; and Quaal, John A., 3,680,016.

Czajkowski, Henry J. Sweeper attachment for harvesting machinery. 3,678,669, Cl. 56-314.000.

Czeck, Joseph J.; Glen Lyon; and Reusser, Raymond E., to Western Electric Company, Incorporated. Crystal grower with expandable chamber and method of use thereof. 3,679,370, Cl. 23-273.0sp.

Dabrush, Charles; and Strauss, Irving, to Chromalloy American Corporation. Bow gauge for turbine engine vanes. 3,678,585, Cl. 33-174.00p.

Dadds, Floyd S.; and Gee, James E., to Caterpillar Tractor Company. Pressure-balanced track roller. 3,679,216, Cl. 277-3.000.

Dahlinger, Rodney J., to Hughes Aircraft Company. Laser flashtube triggering arrangement. 3,679,998, Cl. 331-94.500.

Dainippon Screen Manufacturing Company, Limited: *See—*
Kubo, Nobuzo; and Ito, Takeshi, 3,679,500.

Daitoku, Kouichi; and Kimura, Shuji, to Nippon Kogaku K.K. Light-intercepting means in a camera capable of combination with power driven film rewinding means. 3,679,148, Cl. 242-71.600.

Dalard, Francis Jean; Augustinsky, Jan Witold; and Sohm, Jean-Claude, to Societe des Accumulateurs Fixes et de Traction. Silver oxide-magnesium cell or electrochemical generator. 3,679,488, Cl. 136-100.00m.

Dalson, Milton H.; Gallagher, James P.; Keith, Carl D.; and Pfefferle, William C. Reforming a paraffinic fraction with a platinum-rhenium catalyst. 3,679,578, Cl. 208-138.000.

Daly, Francis Patrick, to RCA Corporation. Metal-oxide-metal, thin-film capacitors and method of making same. 3,679,942, Cl. 317-230.000.

Dammel, Milton H. Looping and hooking machine. 3,678,970, Cl. 140-103.000.

Daniels, Alexander, to U.S. Philips Corporation. Thermal regenerator. 3,678,992, Cl. 165-10.000.

Daniels, David A.: *See—*
Morgan, Charles R.; and Daniels, David A., 3,679,728.

Daniels, David A., to Grace, W. R., & Co. Continuous process for preparing methylenebisiminodiacetonitrile. 3,679,729, Cl. 260-465.5.

Danielsson, Erik, to Aktiebolaget Karlstads Mekaniska Werkstad. Apparatus for transmitting rotational power to a roll. 3,678,775, Cl. 74-410.000.

Danline Manufacturing Company: *See—*
Horton, John P.; and Sulser, Troy S., 3,678,530.

Dannatt, Hugh St. L.: *See—*
Hunt, John M.; and Dannatt, Hugh St. L., 3,679,038.

Danusso, Ferdinando: *See—*
Natta, Giulio; Danusso, Ferdinando; and Ferruti, Paolo, 3,679,643.

Darby, Kenneth S. Precipitating sand and gravel anti-pollution dryer for asphalt plants. 3,678,600, Cl. 34-167.000.

Dare, Roy R.: *See—*
O'Leary, Walter E.; Thornton, Duane V.; Hammonds, James C.; and Dare, Roy R., 3,678,866.

Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., to United States of America, Air Force, mesne. Aircraft towed inflatable antenna. 3,680,129, Cl. 343-706.000.

Dart Industries Inc.: *See—*
Berry, David A.; and Gynn, Gilbert M., 3,679,727.
Parkell, Edward F., 3,679,041.
Swett, James B.; and Croyle, Jack V., 3,679,088.
Swett, James B.; and Croyle, Jack V., 3,679,089.
Davey, Catherine Margaret: *See—*
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Davey, Cyril Norman: *See—*
Wells, Frank Herbert; and Davey, Cyril Norman, 3,678,731.
Davidson, James P.: *See—*
Miller, Stanley J.; and Davidson, James P., 3,679,090.
Davidson, Melvin J., & Zitomer, Bernard M.: *See—*
Ehrlich, Joseph R., 3,678,947.
Davidson, Ragnar Per-Olof, to Aktiebolaget Bofors. Flare body. 3,678,854, Cl. 102-37.800.
Davies, Gordon Idris; Killay, Swansea; and Williams, Terence, to British Iron and Steel Research Association, The. Material depositing apparatus. 3,678,888, Cl. 118-48.000.
Davies, John W., III: *See—*
Enters, Edward W.; Price, Warren H.; Davies, John W., III; and Hochwitz, Lynn E., 3,678,770.
Davis, Anthony Charles; and Fisher, Ian Stuart, to Imperial Chemical Industries Limited. Sheath/core bicomponent filaments and process of preparing same. 3,679, i41, Cl. 161-175.000.
Davis, Edwin R. Multiple stage vapor condensing unit. 3,678,661, Cl. 55-269.000.
Davis, James R.; and Blum, Arthur B., to Standard Pressed Steel Co. Locknut. 3,678,978, Cl. 151-21.
Davis, Paul A.: *See—*
Westcott, Vernon C.; Blanchard, Byron E.; Davis, Paul A.; and Prevot Stephane, 3,678,742.
Davis, Steven S., to Envirotech Corporation. Molded filter leaf. 3,679,061, Cl. 210-486.000.
Day, Lucian P., Jr.: *See—*
Brinks, Floyd J.; Day, Lucian P., Jr.; and Jones, Jerry L., 3,678,867.
DCA Food Industries Inc.: *See—*
Schiffmann, Robert F.; Roth, Howard; Lipka, David H.; and Goodman, Abraham H., 3,679,432.
De Angelis, William M., to Technicon Instruments Corporation. Coupling for joining glass pipe sections and the like. 3,679,237, Cl. 285-109.000.
De Bettencourt, Joseph T.: *See—*
Tsao, Carson K. H.; De Bettencourt, Joseph T.; and Rowland, Howard J., 3,680,133.
De Bucs, Eugen Szabo: *See—*
Oesterhelt, Gerhard; and De Bucs, Eugen Szabo, 3,678,986.
De Coene, Frans J., to Clayson N.V. Separator device for combine harvesters. 3,678,938, Cl. 130-27.00e.
de Lange, Willem; Duyfjes, Werner; and Maas, Willem, to U.S. Philips Corporation. Single-phase pesticidal preparations. 3,679,797, Cl. 424-211.000.
De Mauriac, Richard A.; and Hiller, Gary Lynn, to Eastman Kodak Company. Photothermic composition containing onium halide sensitizer and the use thereof. 3,679,422, Cl. 96-107.000.
De Santis, Alfred J.; Beers, Le Roy W.; White, James A.; and Moysey, John A., to Burroughs Corporation. Information processing system having free field storage for nested processes. 3,680,058, Cl. 340-172.500.
De Simone, Robert: *See—*
Grossman, James D.; Mookherjee, Braja D.; De Simone, Robert; and Theimer, Ernst T., 3,679,749.
De Somer, Pierre; and Claes, Paul, to Recherche et Industrie Therapeutiques, R.I.T. Antiinfectious compositions and process for their preparation. 3,679,795, Cl. 424-180.000.
De Voe, John M., to United States Tobacco Company. Continuous twister pipe cleaner machine. 3,678,674, Cl. 57-77.420.
Deal, Robert S.; and Evans, Joseph H., to Raychem Corporation. Pyrotechnic heating device. 3,679,189, Cl. 263-50.000.
Dean, George A.: *See—*
Miller, Alfred H.; and Dean, George A., 3,679,076.
Degginger, Edward R.: *See—*
Pistilli, Donald J.; and Degginger, Edward R., 3,679,462.
Del Signore, Giovanni. Anti-collision apparatus for vehicles. 3,680,085, Cl. 343-14.00.
Delesdernier, Penelope Brodtmann: *See—*
Reynoir, Diane Greenslit; and Delesdernier, Penelope Brodtmann, 3,678,945.
Dellert, Robert C., to General Electric Company. Testing means for fluidic circuit elements. 3,678,752, Cl. 73-389.000.
Delta Scientific Corporation: *See—*
Kushner, Jack, 3,679,331.
Delta Strapping Industries, Inc.: *See—*
Lefkowitz, Harold, 3,678,541.
Demag Aktiengesellschaft: *See—*
Nieboer, Pieter Hendrik, 3,679,193.
Demag Elektrometallurgie GmbH: *See—*
Reth, Johannes A.; and Fettweis, Winifried H., 3,679,806.
Dembiak, Matthew Raymond; and Webster, George H., to Bell Telephone Laboratories, Incorporated and Western Electric Company, Incorporated. Methods of making shielded electrical cable. 3,679,503, Cl. 156-54.000.
Den Herder, Marvin J.: *See—*
Schaap, Luke A.; and Den Herder, Marvin J., 3,679,588.
Denis, Richard E., to General Motors Corporation. Bell byro and method of making same. 3,678,762, Cl. 73-505.000.
Denki Onkyo Co., Ltd.: *See—*
Masuda, Noboru; and Kuroyanagi, Masashi, 3,680,026.
Denki Onkyo Company Limited: *See—*
Inoue, Keizi, 3,679,918.
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Deradoorian, Bagdasar: *See—*
Colson, William B.; Niedermiller, Herbert C.; and Deradoorian, Bagdasar, 3,679,384.
Derkacz, John J., to Alpha Products, Inc. Moving coil loudspeaker using thin magnet. 3,679,844, Cl. 179-115.50r.
Derr, Millard A., Jr. Trailer hitch. 3,679,231, Cl. 280-406.00a.
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, to Ciba-Geigy AG. Monoazo dyestuffs. 3,679,657, Cl. 260-205.000.
Detection Systems, Inc.: *See—*
Perlman, David E., 3,680,047.
Detroit Flame Hardening Co.: *See—*
Bollinger, William C., 3,679,858.
Dexter, Martin: *See—*
Knell, Martin; and Dexter, Martin, 3,679,744.
Dey, Arabinda N.; and Holmes, Robert W., to Mallory, P. R., & Co., Inc. Lithium-thallium (ic) oxide organic electrolyte cell. 3,679,484, Cl. 136-83.00r.
Dhaliwal, Pritam Singh; and Jaffe, Edward E., to Du Pont de Nemours, E. I., and Company. Yellow pigments. 3,679,684, Cl. 260-272.000.
Di Noia, Emanuel J.; and Breunich, Theodore R., to Universal Oil Products Company. Liquid level indicator system. 3,678,750, Cl. 73-313.000.
Diamond, Horace W., to Morton-Norwich Products, Inc., mesne. Salt production process. 3,679,375, Cl. 23-303.000.
Diamond Power Specialty Corporation: *See—*
Sherrick, Ronald E.; and Singleton, John C., 3,679,173.
Dickey, Clyde W.; and Bland, Ray A., to Sutton Engineering Company. Roller leveler and method of leveling. 3,678,720, Cl. 72-160.000.
Diehl, Roy E., to Ford Motor Company. Internal combustion engine dual induction system. 3,678,905, Cl. 123-52.00m.
Dietz, Milton S.; and Finnemore, Frederick M., to Polaroid Corporation. Photographic apparatus having a handle for effecting film processing. 3,678,832, Cl. 95-13.000.
Dietz, Milton S., to Polaroid Corporation. Ranging and focusing method and apparatus. 3,678,836, Cl. 95-45.000.
Dike, Roy W., to Continental Can Company, Inc. Method of forming an integral one-piece plastic container and carrying handle. 3,679,785, Cl. 264-98.000.
Dillon, Stanley Bernard; Mowbray, Dorian Farrar; and Kamp, Kenneth Albert Walters, to C.A.V. Limited. Gear change switch with multimotion closure actuator. 3,679,846, Cl. 200-6.00a.
Dimeff, John, to United States of America, National Aeronautics and Space Administration. Nondispersive gas analyzing method and apparatus wherein radiation is serially passed through a reference and unknown gas. 3,679,899, Cl. 250-43.50r.
Dixon, Bernard, to Dixon, Bernard, and Partners Limited. Seals for double doors and the like. 3,678,627, Cl. 49-485.000.
Dixon, Bernard, and Partners Limited: *See—*
Dixon, Bernard, 3,678,627.
Dixon, Ronald L., to Eastman Kodak Company. Tobacco smoke filter element and method for making. 3,678,941, Cl. 131-261.00b.
Dodge, Gerald F., III: *See—*
Gelbard, Robert B.; Dodge, Gerald F., III; and True, Howard D. F., Jr., 3,678,698.
Dodington, Sven H., to International Telephone and Telegraph Corporation. Tacan antenna system. 3,680,119, Cl. 343-106.00r.
Doevenspeck, Heinz, to Eifer, Richard, Dr., Wirtschaftsprufungszesellschaft und Steuerberatungsgesellschaft mit beschrankter Haftung. Device for treating disperse systems. 3,679,556, Cl. 204-269.000.
Dohmen, Heinz. Sealed bearings lubricated by a lubricating medium. 3,679,277, Cl. 308-187.100.
Doi, Toshitada; and Akiba, Kosuke, to Sony Corporation. Loop antenna with spaced impedance elements. 3,680,134, Cl. 343-740.000.
Dolan, Richard F., to General Motors Corporation. Measuring probe assembly. 3,678,584, Cl. 33-169.00r.
Dollgast, Walter, to Siemens Aktiengesellschaft. Method of concentrating radioactive waste. 3,679,595, Cl. 252-301.10w.
Domini, Gianfranca: *See—*
Geloso, Giovanni, 3,679,845.
Dominy, Beryl William, to Pfizer Inc. Preparation of quinoxaline-di-N-oxides from Ω-quinnonedioxime and butent-1,4-diones. 3,679,679, Cl. 260-250.00r.
Donovan, Ross Grant; and Wolf, Stewart Franklin, to Canada Packers Limited. Process for the enzymic unhairing of hides. 3,679,548, Cl. 195-6.000.
Dorier, Bernard Louis Marcel; and Laedlein, Denis Jacques, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Antenna system for satellites. 3,680,113, Cl. 343-100.0sa.
Dornier A.G.: *See—*
Heise, Georg, 3,678,692.
Doutt, Kingsley A., to Scovill Manufacturing Company. Vented piston bearing for hydraulic piston and cylinder assemblies. 3,678,809, Cl. 92-86.000.
Dow Chemical Company, The: *See—*

Bernas, Richard J.; and Kaczynski, Clarence J., 3,679,170.
Brown, William E.; Heitz, Robert G.; and Levine, Charles A., 3,679,480.
Cohrs, William E.; and Stroiwas, Edward, 3,679,382.
Corson, Frederick P., 3,679,630.
Frick, Hughie R.; and Anderson, Richard W., 3,679,709.
Jones, Griffin D.; Geyer, Gerald R.; and Hatch, Melvin J., 3,679,748.
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Moore, Eugene R.; and Park, William R. R., 3,679,640.
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Stenger, Vernon A., 3,679,396.
Teal, James L.; Hamilton, Charles Eugene; and Clifford, Dennis A., 3,679,364.
Tsai, James H.; and Anderson, Glenn H., 3,679,722.

Dowbenko, Rostyslaw; and Chang, Wen-Hsuan, to PPG Industries, Inc. Process for electrodepositing acrylic compositions. 3,679,564, Cl. 204-181.000.

Dowling, John B.: *See—*
Rawson, Edward B.; and Dowling, John B., 3,679,875.

Doyle, William P.: *See—*
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Drake, John: *See—*
Jack, James; Drake, John; Thompson, David Crompton; and Harris, Frederick John, 3,679,391.

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Dravo Corporation: *See—*
Coulter, Stanley M.; and Mevissen, Ernst A., 3,679,195.
Smith, George A., 3,679,071.

Drayton, Walker E., to American Chain & Cable Company, Inc. Energy absorbing tie-down winch. 3,679,175, Cl. 254-51.000.

Dresser Industries, Inc.: *See—*
Blattner, Raymond J., 3,678,743.

Driver, Michael C., to Westinghouse Electric Corporation. Self-aligned gate field effect transistor and method of preparing. 3,678,573, Cl. 29-571.000.

Drucker, William A.: *See—*
Madden, Ernest Francis, 3,678,587.

Druin, Melvin L.; Loft, John T.; and Plovan, Steven G., to Celanese Corporation. Open-celled microporous film. 3,679,538, Cl. 161-159.000.

Drutchas, Gilbert H.; Berman, George A.; and Spencer, Phillip B., to TRW Inc. Flat side valve for a pump. 3,679,329, Cl. 417-300.000.

Dryan, James J.: *See—*
Scarnato, Thomas J.; Dryan, James J.; Lawler, Craig M.; and Sorensen, Robert, 3,678,671.

Du Bois, Robert Clark; and Miller, Wayne H., to Pitney-Bowes, Inc. Feedback system for controlling image light energy in electrostatic photocopiers. 3,679,306, Cl. 355-68.000.

Du Pont de Nemours, E. I., and Company: *See—*
Anderson, Arthur William; and Truett, William Lawrence, 3,679,652.
Beresniewicz, Aleksander, 3,679,620.
Bergmann, Michael J., 3,679,943.
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Biswell, Charles B.; and Johnston, Thomas F., 3,679,380.
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Culik, Rudolf; and Schneider, Jurg A., 3,679,798.
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Foss, Robert Paul, 3,679,776.
Griggs, Ernest Lee, Jr.; and Porter, John David, 3,679,153.
Harrell, Jerald R.; Logothetis, Anestis L.; and Verbanc, John J., 3,679,627.
Knowles, Richard N.; and Arthur, Wilfred J., 3,679,805.
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Short, Oliver Alton, 3,679,606.
Vasta, Joseph A., 3,679,642.

Duclaux, Daniel; Givry, Jean-Pierre; and Pointud, Jacky, 50% to Compagnie Pechiney et Electrification and 50% to Charpente. Process and apparatus for supplying alumina. 3,679,555, Cl. 204-67.000.

Dudley, Robert H.: *See—*
Larson, Charles R.; and Dudley, Robert H., 3,679,051.

Duffek, Kenneth John; and Nolan, Thomas Hoyt, to Western Electric Company, Incorporated. Data display systems. 3,680,076, Cl. 340-324.00a.

Duffy, William, to Wiss, J., and Sons Co. Scroll shears or the like. 3,678,580, Cl. 30-267.000.

Dufour, Raymond J.; and Grimm, James J., to Northern Illinois Gas Company. Internal pipe sealing system. 3,678,560, Cl. 29-235.000.

Duhring, Wolfgang: *See—*
Rohner, Dieter; and Duhring, Wolfgang, 3,679,808.

Dukes, John N., to Hewlett-Packard Company. Automatic restarting laser power supply. 3,679,934, Cl. 315-200.00r.

Dulle, William J. Rotating bird perch. 3,678,901, Cl. 119-26.000.

Duncan, Johnson L. Curtain and shade support. 3,679,165, Cl. 248-256.000.

Duncan, Wilson B., Jr. Bin carrier. 3,679,081, Cl. 214-516.000.

Dunlop Company Limited, The: *See—*
Riley, Raymond A., 3,678,790.

Dunlop Holdings Limited: *See—*
Jervis, Roy, 3,679,552.

Dunn, W. E., Mfg. Co.: *See—*
Nordgren, Alfred A., 3,678,971.

Dura-Pak, Inc.: *See—*
Panasewicz, Anton Z., 3,678,652.

Durr, Helmut. Photographic apparatus with indicating means for selected exposure time and aperture size. 3,678,824, Cl. 95-10.0ce.

Duschinsky, Robert: *See—*
Beaman, Alden Gamaliel; Duschinsky, Robert; and Tautz, William Paul, 3,679,698.

Duvall, David Scott: *See—*
Paulonis, Daniel F.; Duvall, David Scott; and Owczarski, William A., 3,678,570.

Duyfjes, Werner: *See—*
de Lange, Willem; Duyfjes, Werner; and Maas, Willem, 3,679,797.

Dvorak, Frank. Metal plate shears. 3,678,792, Cl. 83-459.000.

Dynamit Nobel AG: *See—*
Termin, Erich; Rogler, Walter; Joch, Wilhelm; and Honigschmid-Grossich, Rudiger, 3,679,724.

Dynamit Nobel Aktiengesellschaft: *See—*
Hack, Peter; Hass, Karl; and Schinke, Georg, 3,679,383.
Wienand, Michael; Jensen, Klaus; Primessing, Franz; and Alfter, Franz-Werner, 3,679,531.

Dynell Electronics Corporation: *See—*
Rademacher, Paul; and Hulland, Burton L., 3,680,116.

Dziedzic, Jan. Electrical sensing device for measurement of liquid metal. 3,678,748, Cl. 73-290.00r.

Eagle, John H., deceased (by Eagle, Lee A; executrix; and Lincoln Rochester Trust Company; executor), to Eastman Kodak Company. Means for adjusting camera low-light signal in accordance with film exposure latitude. 3,678,827, Cl. 95-10.0cd.

Eagle, Lee A: *See—*
Eagle, John H., deceased, 3,678,827.

Eagles, Alan Charles: *See—*
Burgess, Anthony Joseph; Eagles, Alan Charles; and Steel, Margaret Lillian, 3,679,506.

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Earthwood, Incorporated: *See—*
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Eastern Time Limited: *See—*
Lee, Admond K.; and Wong, Kwok-Ming, 3,678,679.

Eastman Kodak Company: *See—*
Andler, Richard C.; and Keck, Harley B., 3,679,518.
Barbier, Jean-France Leon Paul; and Renard, Guy, 3,679,424.
De Mauriac, Richard A.; and Hiller, Gary Lynn, 3,679,422.
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Knowles, Frederick G.; and Taylor, Clarence R., 3,679,298.
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Eaton Corporation, mesne: *See—*
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Eaton, Randell C. Coupling guard device. 3,678,717, Cl. 70-232.000.

Eaton, Russell K.: *See—*
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Ebin, Joseph A., to Lockheed Aircraft Corporation. Redundant seal ball valve. 3,678,956, Cl. 137-242.000.

Echo Science Corporation, mesne: *See—*
Maxey, Alexander R., 3,678,563.
Maxey, Alexander R., 3,679,840.
Salcedo, Guido; and Graves, Jimmy J., 3,679,838.

Eckert, Klaus-Dieter; and Roper, Hans-Joachim, to International Standard Electric Corporation. Tacan method. 3,680,117, Cl. 343-106.00r.

Eckstein, Arthur: *See—*
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Economics Laboratory, Inc.: *See—*
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Eddystone Machinery Company: *See—*
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Edgar, Owen Burchell; Hughes, William; Lawrance, Derek Robert; Lederer, Gerald; and Ritchie, Colin Foster, to Imperial Chemical Industries Limited. Polyamides. 3,679,624, Cl. 260-37.00n.

Edu-Matic Designs, Ltd.: *See—*
Carrano, Andrew J., Jr.; Cotsalas, Stephen N.; and Jacobson, John E., 3,679,208.

Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich. Framework structure for a hydraulic press. 3,678,728, Cl. 72-455.000.

EG&G, Inc.: *See—*
Goldberg, Seymour, 3,679,021.

Eggleston, Gerard; and Bosworth, George, to Microdot, Inc. Pressure transducer. 3,678,753, Cl. 73-393.000.

Egloff, Anton: *See—*
Bruhwiler, Othmar; and Egloff, Anton, 3,678,967.

Ehbrecht, Edwin. Knee joint for prosthetic appliance. 3,678,517, Cl. 3-27.000.

Ehrenberg, Hermann, to Fouquet-Werk Frauz & Planck. Article of manufacture. 3,679,245, Cl. 287-52.000.

Ehrensing, Alvin T.; and Taylor, Clement R., to Boise Cascade Corporation. Panel coating apparatus. 3,678,890, Cl. 118-63.000.

Ehrlich, Joseph R., to Davidson, Melvin J., & Zitomer, Bernard M. Eyeliner. 3,678,947, Cl. 132-88.700.

Eifer, Richard, Dr., Wirtschaftsprufungszesellschaft und Steuerberatungsgesellschaft mit beschrankter Haftung: *See—*
Doevenspeck, Heinz, 3,679,556.

Elberger, Martin. Minature inductances. 3,680,018, Cl. 336-221.000.

Electrical Remote Control Company Limited: *See—*
Ponting, Ivor, 3,678,780.

Electro-Security Devices, mesne: *See—*
Humphrey, Harold D.; and Juengel, Richard O., 3,680,073.

Electronic Products Corporation: *See—*
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Elfstrom, Gosta: *See—*
Bogren, Hugl; Elfstrom, Gosta; and Tengroth, Bjorn, 3,679,901.

Elitex, Zavody textilniho strojirenstvi: *See—*
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Elkhart Welding & Boiler Works, Inc.: *See—*
Weber, Charles A., 3,679,232.

Elliott Associated Developments Limited: *See—*
Elliott, Herbert James, 3,679,269.

Elliott, Herbert James, to Elliott Associated Developments Limited. Transport of sulphur. 3,679,269, Cl. 302-14.

Ellis, Colin R. G.; and Lilly, Rodger H., to Welding Institute, The. Friction welding. 3,678,566, Cl. 29-470.300.

Ellison, Thomas M.: *See—*
Conley, Kenneth E.; and Ellison, Thomas M., 3,679,510.

Emery Industries, Inc.: *See—*
Boylan, Jack B.; and Sturwold, Robert J., 3,679,617.

Enchelmaier, Harvard W. K.: *See—*
Enchelmaier, William F.; Enchelmaier, Harvard W. K.; and Enchelmaier, William J., 3,678,523.

Enchelmaier, William F.; Enchelmaier, Harvard W. K.; and Enchelmaier, William J. Brushing device. 3,678,523, Cl. 15-21.00d.

Enchelmaier, William J.: *See—*
Enchelmaier, William F.; Enchelmaier, Harvard W. K.; and Enchelmaier, William J., 3,678,523.

Energy Conversion Devices, Inc.: *See—*
Feinleib, Julius; Klose, Peter H.; and Ovshinsky, Stanford R., 3,678,852.

Eng, Albert, to Foto-Mem, Inc. Microfiche reproduction system. 3,679,304, Cl. 355-41.000.

Engelhard Minerals & Chemicals Corporation: *See—*
Greenspan, Lawrence, 3,679,553.
Zysk, Edward D.; and Osovitz, Eugene E., 3,679,491.

Engelhardt, Alvin: *See—*
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Engineered Products, Inc.: *See—*
Vance, Lawrence T., 3,678,625.

England, George G., to Singer Company, The. Baffle for electric baseboard heater units. 3,679,868, Cl. 219-368.000.

English Electric Company Limited, The: *See—*
Crick, Roger Dudley Salway, 3,679,527.

Englund, James A.; and Popek, Stephen, to Alcan Aluminum Corporation. Ceiling suspension system. 3,678,641, Cl. 52-484.000.

ENI-l'Electro-Navale & Industrielle S.E.P.I.: *See—*
Van Impe, Jean; Chaussonnet, Pierre E.; and Rombaux, Jean-Pierre M., 3,679,378.

Ensslin, Frieder H., to Bendix Corporation, The. R-F Sputtering apparatus. 3,679,571, Cl. 204-298.000.

Enters, Edward W.; Price, Warren H.; Davies, John W., III; and Hochwitz, Lynn E., to Gilson Bros. Co. Single lever control. 3,678,770, Cl. 74-197.000.

Envirotech Corporation: *See—*
Davis, Steven S., 3,679,061.
Haymore, Ralph B., 3,679,056.

Eppler, Richard Andrew, to SCM Corporation. Composition and process for glazing ceramic ware. 3,679,464, Cl. 117-175.000.

Epstein, Barry D.: *See—*
Compton, Dinsdale M. J.; and Epstein, Barry D., 3,679,898.

Erdley, Harold F.; and Wyse, Stanley F., to Litton Systems, Inc. Gyroscope having vibrating gimbals. 3,678,764, Cl. 74-5.000.

Erickson, Richard L.: *See—*
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Eriez Manufacturing Company: *See—*
Tenpas, Emerson J., 3,678,723.

Eriksson, Anders Karl Oskar; and Wallenius, Jan Folke, to AB Svensk Industris Konstruktionsoch berakningskontor Sikob. Apparatus for cutting annular elastic bands. 3,678,791, Cl. 83-95.000.

Erlichman, Irving, to Polaroid Corporation. Photographic apparatus. 3,678,830, Cl. 95-13.00r.

Erman, William F.: *See—*
Kretschmar, Herbert C.; and Erman, William F., 3,679,756.

Ernst, Lothar; and Ruggen, Werner, to Maschinenfabrik Stromag G.m.b.H. Flexible couplings. 3,678,708, Cl. 64-11.0r.

Eschle, Karl: *See—*
Huber-Emden, Helmut; Eschle, Karl; and Maeder, Arthur, 3,679,779.

Essery, John Michael, to Bristol-Myers Company. Pivaloyloxymethyl hetacillin. 3,679,663, Cl. 260-239.100.

Esso Research and Engineering Company: *See—*
Gorbaty, Martin L., 3,679,683.

Estes, Harry A.: *See—*
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Estin, Hans: *See—*
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Estin, Hans H.: *See—*
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Ethyl Corporation: *See—*
Lehikoinen, Urho A., 3,679,594.

Ethyl Development Corporation: *See—*
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Lambert, Bernard, 3,679,777.

Ettischer, Helmut: *See—*
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Evalds, Egils. Temperature control circuit employing a variable resistance heating element. 3,679,871, Cl. 219-499.000.

Evangelisti, Carlo J.: *See—*
Baskin, Herbert B.; Belady, Laszlo A.; Evangelisti, Carlo J.; and Morse, Stephen P., 3,680,078.

Evans, Joseph H.: *See—*
Deal, Robert S.; and Evans, Joseph H., 3,679,189.

Evans, Norol T., to Hughes Aircraft Company. Automatic detection criteria control unit for pencil beam radars. 3,680,095, Cl. 343-7.00a.

Evans, Robert W.; Grimm, Richard C.; and Olstein, Myron A., to Susquehanna Corporation, The. Aerosol disseminator. 3,678,857, Cl. 102-39.000.

Evans, Ronald James Peter, to Talley Surgical Instruments Limited. Alternating pressure pads for bed patients. 3,678,520, Cl. 5-91.000.

Eversole, William C.; and Heaton, James W., to Kennametal Inc. Quill for machine tools. 3,678,632, Cl. 51-168.000.

Ezaki, Joichiro, to TDK Electronics Company Ltd. Core drive and biasing system. 3,680,048, Cl. 340-/166.00r.

Ezhov, Leonid Antipovich; Kudevitsky, Yankel Veniaminovich; and Belyaeva, Ljudmila Pavlovna, to Leningradsky Metallichesky Zavod Imeni XXII Siezda KPSS. Profile flat tooth milling cutter. 3,678,554, Cl. 29-103.000.

Fabbrica Italiana Magneti Marelli S.p.A.: *See—*
Zoppi, Bruno, 3,679,333.

Fabens, Andrew Lawrie, Jr., to Truline Casting Company. Apparatus for continuous casting of hollow bar. 3,678,990, Cl. 164-274.000.

Faccou, Armand L., to FMC Corporation. Pipe swivel joint for corrosive fluids. 3,679,235, Cl. 285-14.000.

Factor, Arnold: *See—*
Chalk, Alan J.; and Factor, Arnold, 3,679,629.

Fagerstrom, Kurt Gunnar, to Aktiebolaget Electrolux. Method of drying articles being surface-coated. 3,678,595, Cl. 34-13.400.

Fairchild, Albert R., to Western Electric Company, Incorporated. Pallet and mask for substrates. 3,678,892, Cl. 118-504.000.

Faith, Ruth L.; and Grobman, William, to Singer Company, The, mesne. Card deck checker. 3,679,876, Cl. 235-61.70r.

Falk, Robert A.: *See—*
Mayes, Nathan; and Falk, Robert A., 3,679,755.

Fall, Herbert S.; York William D.; and Huff, Larry D., said York and said Huff assors. to said Fall. Ball bearing slide with synchronizing mechanism. 3,679,275, Cl. 308-3.800.

Fang, Frank F.; and Fowler, Alan B., to International Business Machines Corporation. Process for making mosfet's. 3,679,492, Cl 148-1.500.

Fang, Frank F.; and Lean, Eric G., to International Business Machines Corporation. Acoustic wave parametric amplifier/converter. 3,679,985, Cl. 330-4.600.

Fanta, Wayne I., to Procter & Gamble Company, The. Esters of 3-(2,2-tetramethylene ethenyl)-2,2-dimethylcyclopropanecarboxylic acid. 3,679,667, Cl. 260-240.00r.

Fanti, Roy: *See—*
Basche, Malcolm; Fanti, Roy; Galasso, Francis S.; Kuntz, Urban E.; and Schile, Richard D., 3,679,475.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Gilch, Heinrich; and Schnell, Hermann, 3,679,613.
Gossens, Hubert; Kammermeier, Jurgen; and Kloker, Werner, 3,679,539.
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Hermann, Gunter; and Schmidt, Karl-Julius, 3,679,796.
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Farbwerke Hoechst Aktiengesellschaft: *See*—
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Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See*—
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Jager, Georg; and Geiger, Rolf, 3,679,655.
Lohe, Konrad; Mohr, Reinhard; Mundlos, Eberhard; and Freb, Hermann, 3,679,358.
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Farnam, F. D., Co.: *See*—
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Farnam, Robert G., to Farnam, F. D., Co. Unitized valve plate, gaskets and the like. 3,679,218, Cl. 277-233.000.
Farque, C. Anthony, to Wilburn, Ray H. and Maldonado, W. E., mesne. Chopper circuit for use in an A.C. servo amplifier. 3,679,957, Cl. 318-684.000.
Farrant, David J. Systems for drawing trailers behind tractors. 3,679,230, Cl. 280-405.00b.
Farwell, Harry Russell: *See*—
Black, James A.; and Farwell, Harry Russell, 3,679,112.
Fasching, George E.: *See*—
Smith, Nelson S., Jr.; and Fasching, George E., 3,679,973.
Fazio, Joseph. Safety plug for firearms. 3,678,609, Cl. 42-1.00n.
Fechtig, Bruno: *See*—
Heusler, Karl; and Fechtig, Bruno, 3,679,676.
Fein, Harry. Resistive modulator. 3,679,975, Cl. 324-118.000.
Feinauer, Roland; Thier, Werner; and Schneider, Wolfgang, to Chemische Werke Huls, A.G. Process for the antistatic treatment of linear crystallizable polyesters and products thus treated. 3,679,468, Cl. 117-138.80f.
Feinleib, Julius; Klose, Peter H.; and Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Printing and copying employing materials with surface variations. 3,678,852, Cl. 101-465.000.
Feisst, Jutta: *See*—
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Feldman, Irwin M., to Ambac Industries, Incorporated. Magnetically-tuned gyroscope. 3,678,765, Cl. 74-5.460.
Feldman, Martin Louis; and Gordon, John Edson, to American Cyanamid Company. Recovery and purification of basic triarylmethane dyes. 3,679,713, Cl. 260-388.000.
Fengler, Harald: *See*—
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Fenner, James M., to National-Standard Company. Apparatus for handling shrinkable material. 3,679,190, Cl. 266-3.00r.
Fenton, Donald M., to Union Oil Company of California. Preparation of substituted pyridines. 3,679,688, Cl. 260-290.00p.
Fenton, Donald M., to Union Oil Company of California. Preparation of substituted pyridines. 3,679,689, Cl. 260-290.00h.
Ferguson, William K. Slope and grade meter. 3,678,885, Cl. 116-124.000.
Fermani, Luigi: *See*—
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Fermani, Marcello: *See*—
Prusinski, Richard C.; Fermani, Marcello; Torcolacci, Attilio; and Fermani, Luigi, 3,679,529.
Ferraro, Natty P. Animal run leasch guide assembly. 3,678,903, Cl. 119-120.000.
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Fettweis, Winifried H.: *See*—
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Feuer, Michael M.; and Kotler, Richard G., to Blow-Knox Foundry & Mill Machinery, Inc. Rolling mill. 3,679,150, Cl. 242-78.100.
Fiber Industries, Inc.: *See*—
Portus, Bruce W., 3,679,635.
Fickenscher, William E., to Bendix Corporation, The. Automatic baggage handling system. 3,679,874, Cl. 235-61.70r.
Field, Nathan D.: *See*—
Freyermuth, Harlan B.; and Field, Nathan D., 3,679,649.
Fielibert, Josef Frans, to Lever Brothers Company. Process for sealing laminated materials. 3,679,509, Cl. 156-182.000.
Figueroa, David R., to Coulter Electronics, Inc. Mathematic root computer. 3,679,884, Cl. 235-193.500.
Files, Charles R. Fishing tackle carrier. 3,678,611, Cl. 43-26.000.
Filper Corporation: *See*—
Kilner, George E., 3,679,049.
Fink, Arno: *See*—
Muller, Alfred; and Fink, Arno, 3,679,401.
Finkbiner, Roy R., to Barber-Colman Company. Adjustable depth immersion temperature sensing device. 3,679,490, Cl. 136-221.000.
Finkle, Eugene D.; and Patterson, James A. Tennis racket for developing tennis swing. 3,679,205, Cl. 273-29.00a.
Finnemore, Frederick M.: *See*—
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Finney, Karl F.: *See*—
Pomeranz, Yeshajahu; and Finney, Karl F., 3,679,433.
Firestone, Raymond A., to Merck & Co., Inc. Method of preparing(cis-1,2-epoxypropyl)phosphonic acid esters. 3,679,711, Cl. 260-348.00r.
Firestone, Raymond A., to Merck & Co., Inc. Method for the preparation of (cis 1,2-epoxypropyl) phosphonic acid derivatives. 3,679,712, Cl. 260-348.00r.
First Dynamics, Inc.: *See*—
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Fischer, Artur: *See*—
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Fischer, Artur; and Muller, Jean-Nicolas, to Fischer, Artur. Connector for fractured bones. 3,678,925, Cl. 128-92.0bb.
Fischer, Georg AG: *See*—
Bruhwiler, Othmar; and Egloff, Anton, 3,678,967.
Fischer, John F., to Smith International Incorporated. Worn bearing indicator. 3,678,883, Cl. 116-114.00q.
Fisher, Ian Stuart: *See*—
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Fitzpatrick, John S.: *See*—
Conrady, James A.; and Fitzpatrick, John S., 3,679,703.
Flaminaire Marcel Quercia: *See*—
Lambert, Jacques, 3,678,695.
Fleischner, Peter L., to National Beryllia Corporation. Apparatus and method for continuously depositing beryllia through vaporization of a basic formate. 3,679,463, Cl. 117-107.20r.
Flink, John W. Convertible boat. 3,678,874, Cl. 114-66.50p.
Flint, Hans Gerhard; and Neitzel, Ulrich E. G., to Great Salt Lake Minerals and Chemicals Corporation. Process for removing sulfate from magnesium chloride brines contaminated therewith. 3,679,376, Cl. 23-304.000.
Flo-Tech Corporation, mesne: *See*—
Rosenberg, Karl M., 3,678,891.
Flo-Tech Corporation: *See*—
Rosenberg, Karl M., 3,679,784.
Florian, Raymond J. Golf putter construction. 3,679,207, Cl. 273-80.00a.
Flowers, Ralph G.; and Sherer, Thomas L., to General Electric Company. Polyamide-acid composition and method of preparation. 3,679,632, Cl. 260-47.0cp.
Flynn, Robert, to Ciba-Geigy Corporation. Process for producing hardenable epoxy resin compositions. 3,679,465, Cl. 117-126.0ge.
FMC Corporation: *See*—
Faccou, Armand L., 3,679,235.
Gibbons, Loren K., 3,679,682.
Guyaux, James R.; Le Duc, Donald; and McDonald, Dean T., 3,679,075.
Miller, Rodney D.; and Nielsen, John K., 3,678,677.
Mizuma, Noriaki; and Yokota, Yuzo, 3,679,352.
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Chmela, John F.; and Fohrman, Seymour F., 3,679,103.
Foley, Thomas P., to United States of America, Navy, mesne. Method for displaying the range detection capability of a search radar in a noisy environment. 3,680,106, Cl. 343-18.00e.
Foltz, James W., to Motorola, Inc. Binary flip-flop employing insulated gate field effect transistors and suitable for cascaded frequency divider operation. 3,679,913, Cl. 307-279.000.
Food Protein Concentrates, Inc.: *See*—
Zhumkhawala, Yusuf M., 3,678,994.
Forance, Ronald B.; Madden, William F.; and Gaucher, Clair H. Sanitary bag holder. 3,679,125, Cl. 229-55.000.
Ford, Frank P.: *See*—
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Forrest, Robert B.: *See—*
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Forster, Wolfgang C., to Reichhold Chemicals, Inc. Method of isomerizing 4-cyclo-hexene-1,2- dicarboxylic acid anhydrides. 3,679,710, Cl. 260-346.300.

Fort, Emil M., to Westinghouse Electric Corporation. Electrical apparatus with corona suppression means. 3,679,925, Cl. 310-196.000.

Foss, Robert Paul, to Du Pont de Nemours, E. I., and Company. Polymerization of hydrocarbon dienes with lithium-sodium alloys. 3,679,776, Cl. 260-879.000.

Foto-Mem, Inc.: *See—*
Eng, Albert, 3,679,304.

Fougeray, Jean Henri Roger; and Giffard, Louis Henri Jules. Dipping form for making skin-type articles from plastic material. 3,679,342, Cl. 425-275.000.

Fouquet-Werk Frauz & Planck: *See—*
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Fowler, Alan B.: *See—*
Fang, Frank F.; and Fowler, Alan B., 3,679,492.

Fram Corporation: *See—*
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Franck, Kurt, to Halophane Company, Inc. Bi-directional highway luminaire. 3,679,889, Cl. 240-25.000.

Francois, Xavier; Venet, Roland Jean; and Prioretti, Guy Pierre, to Union Siderurgique du Nord et de l'Est de la France Par Abreviation "USINOR". Machine for tying up coils of filament such as wire. 3,678,845, Cl. 100-4.000.

Franklin, Denis; Gingold, Jerald S.; Oxenham, Ronald B.; and Rogers, Raymond E. Status display panel indicating performance as a function of time with record feature. 3,680,084, Cl. 340-381.000.

Frazier, Lauren L.: *See—*
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Freb, Hermann: *See—*
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Fredericks, Carl K., to Corlite Corporation. Method of fabricating cellular structures. 3,678,558, Cl. 29-160.000.

Free, Maurice G.; and Wisseman, Leo L., to Motorola, Inc. Neutron radiation and gamma ray hardened adjustable power supply. 3,679,963, Cl. 323-4.000.

Freres, Clemens H.: *See—*
Bickel, John E.; Freres, Clemens H.; Gossard, Earl E.; Britt, James E.; Ortwein, Norman R.; and Swanson, Eric R., 3,680,115.

Frey, Robert J., to Signode Corporation. Control system for apparatus for friction-fusing overlapping portions of a thermoplastic strapping ligature. 3,679,519, Cl. 156-359.000.

Freyermuth, Harlan B.; and Field, Nathan D., to GAF Corporation. Polyvinyl alcohol esterification in N-methyl-2-pyrrolidone. 3,679,649, Cl. 260-91.3va.

Frick, Hans-Dieter: *See—*
Kohler, Roland; Frick, Hans-Dieter; Fengler, Harald; and Geyken, Erwin, 3,678,843.

Frick, Hughie R.; and Anderson, Richard W., to Dow Chemical Company, The. Preparation of octafluorotetrahydrofuran. 3,679,709, Cl. 260-346.10r.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Aust, Manfred; and Smuda, Gerhard, 3,679,520.

Friederich, Claude; and Cramazou, Etienne, to Societe Anonyme dite: Plastra. Closet for storage of clothing and the like. 3,679,280, Cl. 312-6.000.

Friedl, Wolfgang; and Schafer, Volker, to Original Hanau Quartzlampen, GmbH. Noble gas-molecular nitrogen laser. 3,679,997, Cl. 331-94.500.

Friedrich, Herbert; and Trapp, Gunther, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Basic hemicyanine dyestuffs. 3,679,674, Cl. 260-240.800.

Fuji Photo Film Co., Ltd.: *See—*
Honjo, Satoru; and Tamai, Yasuo, 3,679,586.
Kasugai, Tsuneo; and Minagawa, Nobuhiko, 3,679,455.
Makino, Katsuo; and Sawato, Iwao, 3,679,405.
Shiba, Keisuke; Tsubota, Motohiko; Sato, Akira; Ikeda, Tadashi; and Ogawa, Akira, 3,679,428.

Fujii, Tsuneji, to Toyoda Koki Kabushiki Kaisha. Apparatus for dressing side surfaces of grinding wheels. 3,678,916, Cl. 125-11.000.

Fujimoto, Shinichiro. Massaging apparatus. 3,678,924, Cl. 128-46.000.

Fujimoto, Yoshiaki: *See—*
Ogawa, Juro; and Fujimoto, Yoshiaki, 3,679,976.

Fujio, Masaaki. Wrapper with tear tabs of heat-shrinking synthetic resin film. 3,679,048, Cl. 206-46.00r.

Fujisawa, Yukimasa: *See—*
Fukuda, Masao; Goto, Hachiro; Norota, Susumu; and Fujisawa, Yukimasa, 3,679,533.

Fujita, Kinji, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece. 3,678,680, Cl. 58-23.00r.

Fujiwara, Yukio: *See—*
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Fukazawa, Nobuo: *See—*
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Fukuda, Masao; Goto, Hachiro; Norota, Susumu; and Fujisawa, Yukimasa, to Teijin Limited. Loop pile fabric and methods for manufacturing same. 3,679,533, Cl. 161-66.000.

Fukue, Norihiko: *See—*
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Fukui, Kakichi: *See—*
Taniguchi, Tetsuji; Fukui, Kakichi; Imai, Shiro; Hayashi, Masahiro; and Seki, Koichi, 3,678,722.

Fulcher, Robert Wendell. Process for launching and recovery of top-of-vehicle transported watercraft. 3,679,080, Cl. 214-450.000.

Fulkerson, Emmet Mitchell, to General Electric Company. Apparatus with stem overcurrent protection. 3,679,566, Cl. 204-228.000.

Fullerton, George W., to Earthwood, Incorporated. Neck mounting for a string instrument. 3,678,795, Cl. 84-293.000.

Fumagalli, Giacomo: *See—*
Latour, Andre; and Fumagalli, Giacomo, 3,679,851.

Funk, Stanley T., to McGraw-Edison Company. Door construction for washer-extractor drum. 3,678,715, Cl. 68-143.000.

Furihata, Hideo: *See—*
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Fuselier, Claude. Manufacture of plastic articles. 3,679,337, Cl. 425-130.000.

Fussell, Richard L., to Burroughs Corporation. Magnetometer sensor digital ambient nulling system. 3,679,969, Cl. 324-43.00r.

G. D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Serganoli: *See—*
Seragnoli, Ariosto, 3,679,079.

Gach, Peter P., to Sunbeam Plastics Corporation. Child proof cap for medicine bottles. 3,679,085, Cl. 215-9.000.

Gaetani, Bruno: *See—*
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GAF Corporation: *See—*
Beiswanger, John Paul Gerhardt; and Nassry, Assadullah, 3,679,493.
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Galiano, Francis R.; and Smith, Wayne E., to Gulf Research & Development Company. Treatment of ethylene unsaturated acid ester copolymer with alkaline medium. 3,679,561, Cl. 204-159.150.

Gallagher, James P.: *See—*
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Gamaunt, Roger L.: *See—*
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Ganowsky, Raymond J., to Cliftronics, Inc. Hinge means for a rotary solenoid armature. 3,680,015, Cl. 335-228.000.

Gansert, Willi: *See—*
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Garber, A. L., Company, The: *See—*
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Garnish, Artur Maximovich; Shafransky, Lev Moiseevich; and Ischerikova, Galina Antonovna. Catalyst for oxidation of olefins. 3,679,603, Cl. 252-432.000.

Garrett Corporation, The: *See—*
Rummel, Samuel L., 3,679,025.

Garrison, John H.: *See—*
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Gasc, Jean-Claude: *See—*
Bucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, 3,679,718.

Gaucher, Clair H.: *See—*
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Gauthier, Gerard: *See—*
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Geber, Eugene E., to Industra Products, Inc. Drive for in-slot winding machine. 3,678,766, Cl. 74-23.000.
Gebhardt, James J., Jr.: *See—*
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Gebr. Isringhausen, Firma: *See—*
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Geigy Chemical Corporation: *See—*
Grunwaldt, Edgar, 3,679,804.
Geis, James D.; Troll, John H.; Gluz, Harry; and Baker, Cole H., to Iris Corporation. Automatic thermometer calibration system. 3,678,729, Cl. 73-1.00f.
Gelbard, Robert B.; Dodge, Gerald F., III; and True, Howard D. F., Jr., to General Electric Company. Side-by side refrigerator including low cost evaporator means. 3,678,698, Cl. 62-276.000.
Gelber, Robert M.: *See—*
Apfel, Joseph H.; and Gelber, Robert M., 3,679,291.
Geloso, Giovanni; deceased (by Domini, Gianfranca; sole heir). Lighting unit incorporating loudspeakers. 3,679,845, Cl. 179-146.00r.
Gemander, Georg: *See—*
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Gemperle, Edward Carroll: *See—*
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General Mills, Inc.: *See—*
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Gennick, William, to Ford Motor Company. Coupler between a dumpable container and a receiving container dumpable and receiving container coupler. 3,679,077, Cl. 214-302.000.
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Gerber, Eliot S.: *See—*
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Gerecht, John Fred, to Colgate-Palmolive Company. Compositions with hydroxyalkyl piperidine or pyrrolidine oxides. 3,679,611, Cl. 252-542.000.
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Moore, George G. I.; and Gerster, John F., 3,679,695.
Gerwitz, Paul F., to Spectrol Electronics Corporation. Combined potentiometer and switching structure with improved radial contact pressure contact means. 3,679,848, Cl. 200-8.00a.
Gestra KSB Vertriebsgesellschaft mbH & Co.: *See—*
Hohn, Gerhard; Lingnau, Josef; and Rettemeier, Wulf, 3,679,131.
Geus, John W., to Stamicarbon N.V. Process for the preparation of acicular, submicroscopic, permanently magnetizable metal particles. 3,679,398, Cl. 75-108.000.
Gevaert-AGFA N.V.: *See—*
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Geyer, Gerald R.: *See—*
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Geyken, Erwin: *See—*
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GHH-M.A.N. Technik Gesellschaft fur Anlagenbau m.b.H.: *See—*
Kunz, Gerhard K., 3,679,581.
Gibbons, Loren K., to FMC Corporation. Certain 5H-isoxazolo 5,4-d pyrimioin-4-ones. 3,679,682, Cl. 260-256.40f.
Gibson, Charles B., Jr., to Tektronix, Inc. Facsimile system. 3,679,824, Cl. 178-6.70r.
Gibson, George W.: *See—*
McCamis, Marvin J.; and Gibson, George W., 3,680,036.
Giddings, David George; and Murphy, David Duncan, to Pilkington Brothers Limited. Toughening of glass. 3,679,388, Cl. 65-116.000.
Giesfeldt, William Otto; and Pinnow, Roy Lee, to Globe-Union Inc. Method for forming ohmic contacts. 3,678,569, Cl. 29-473.100.
Giffard, Louis Henri Jules: *See—*
Fougeray, Jean Henri Roger; and Giffard, Louis Henri Jules, 3,679,342.
Gilby, Patricia G.; and Heineman, William R., to Hercules Incorporated. Hexavalent chromium reduction. 3,679,557, Cl. 204-97.000.
Gilch, Heinrich; and Schnell, Hermann, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of polyamide foams. 3,679,613, Cl. 260-2.50n.
Gilchrist, Allan E., to SCM Corporation. Process for electrolytic treatment of liquors using pressure cell with porous electrode means. 3,679,565, Cl. 204-180.00r.
Gilchrist, Allan E., to Ford Motor Company. Multi-component electrocoating compositions. 3,679,615, Cl. 260-3.300.
Gillich, Thomas N., to Azoplate Corporation. Light-sensitive diazo condensate containing reproduction material. 3,679,419, Cl. 96-91.00r.
Gilman, Robert W., to California Pellet Mill Company. Extrusion mill with roller adjustment means. 3,679,343, Cl. 425-331.000.
Gilson Bros. Co.: *See—*
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Girling Limited: *See—*
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Giroud, Henri Philibert, to Societe d'Exploitations et de Realisations Industrielles et Commerciales Serico. Siphon-valve stopper comprising a body enclosing a CO capsule. 3,679,104, Cl. 222-396.000.
Givry, Jean-Pierre: *See—*
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G.K.N. Birfield Transmissions Limited: *See—*
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Glass, Marvin, & Associates: *See—*
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Globe-Union Inc.: *See—*
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Gloess, Paul F. Key board printer. 3,679,036, Cl. 197-18.000.
Gluz, Harry: *See—*
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Godai, Tomokazu: *See—*
Arikawa, Masayasu; Godai, Tomokazu; Arai, Toshio; Hironosuke, Kada; and Akihiko, Iochi, 3,679,866.
Godbehere, Albert Edward, to Pryor, Edward, Developments Limited. Electrolytic marking of metal objects. 3,679,558, Cl. 204-143.00r.
Goerz, David J., Jr.; and Stephansen, Erik W., to Bechtel International Corporation. Paper making system and apparatus. 3,678,594, Cl. 34-1.000.
Goldberg, Seymour, to EG&G, Inc. Acoustic pulse generating system. 3,679,021, Cl. 181-.50h.
Golden, Richard L.; and Mazzella, Gerald, to Halcon International, Inc. Boric acid recovery. 3,679,751, Cl. 260-586.00b.
Goldfarb, Adolph E.; Strader, Judith D.; and Strader, George C., to Mattel, Inc., mesne. Doll. 3,678,616, Cl. 46-151.000.
Goldman, Henry. Non-opaque, light-filtering phototypographic font. 3,678,840, Cl. 95-85.000.
Goldmark, Peter C., to Columbia Broadcasting System, Inc. Record medium for picture information. 3,679,817, Cl. 178-5.4cd.
Goldsmith, Clifton R., to Phillips Petroleum Company. Pressurized chamber containing self-curing ingredients. 3,679,599, Cl. 252-305.000.
Goldstein, Robert L. Crystal light modulator providing both aperture and intensity control. 3,679,289, Cl. 350-150.000.
Goldstone, Bertram J., to Raytheon Company. Pulse compression radar system. 3,680,105, Cl. 343-17.2pc.
Goldstone, Bertram J., to Raytheon Company. Analog ferrite phase shifter control circuit. 3,680,110, Cl. 343-100.0sa.
Gondeck, Allan R., to Western Electric Company, Incorporated. Digital sine wave generator and method. 3,679,881, Cl. 235-152.000.
Goodfellow, Robert D., to Kennametal Inc., mesne. Rotary cutter for excavation, especially for use with raise boring and tunnel boring machines. 3,679,009, Cl. 175-374.000.
Goodman, Abraham H.: *See—*
Schiffmann, Robert F.; Roth, Howard; Lipka, David H.; and Goodman, Abraham H., 3,679,432.
Goodman, H., & Sons, Inc.: *See—*
Katz, Norman, 3,678,946.
Goodrich, B. F., Company, The: *See—*
Conrady, James A.; and Fitzpatrick, John S., 3,679,703.
McGinnis, Hebert E., 3,679,044.
Gorbaty, Martin L., to Esso Research and Engineering Company. Barbiturate 3-n-methylene phosphates. 3,679,683, Cl. 260-257.000.
Gorbei, Janos Miklos: *See—*
Widmer, Fritz; and Gorbei, Janos Miklos, 3,678,983.
Gordon, Jeanne E., to Owens-Corning Fiberglas Corporation. Method for determining relative degree of cure of impregnated tire cord. 3,679,457, Cl. 117-66.000.
Gordon, John Edson: *See—*
Feldman, Martin Louis; and Gordon, John Edson, 3,679,713.
Gordon, Robert C.: *See—*
Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., 3,680,129.
Gorin, Eugene, to I-T-E Imperial Corporation. Rigid multiconductor bus system for use in high current and extra ultra high voltage systems. 3,679,811, Cl. 174-72.00b.
Gossard, Earl E.: *See—*
Bickel, John E.; Freres, Clemens H.; Gossard, Earl E.; Britt, James E.; Ortwein, Norman R.; and Swanson, Eric R., 3,680,115.
Gossens, Hubert; Kammermeier, Jurgen; and Kloker, Werner, to Farbenfabriken Bayer Aktiengesellschaft. Lightweight building units. 3,679,539, Cl. 161-159.000.
Gostelow, Daniel William Fredrick, to Bentley Machine Development Company Limited, The. Needle operating means in knitting machines. 3,678,710, Cl. 66-14.000.
Gothard, David O.: *See—*
Manilla, Charles E.; Honaker, Harold H.; and Gothard, David O., 3,678,567.
Gothard, Sydney Averill, to Vickers Limited. Apparatus for treating refuse. 3,679,142, Cl. 241-181.000.
Goto, Hachiro: *See—*
Fukuda, Masao; Goto, Hachiro; Norota, Susumu; and Fujisawa, Yukimasa, 3,679,533.
Gotoh, Miyuki, to Nissan Motor Company Limited. Method and apparatus for detecting mispick in loom. 3,678,969, Cl. 139-370.000.
Grace, W. R., & Co.: *See—*
Daniels, David A., 3,679,729.
Lee, Hanju; and Chi, Dongsuk, 3,679,604.
Morgan, Charles R.; and Daniels, David A., 3,679,728.
Zimmer, Austin A., 3,679,477.
Graham, Walton; and Keegan, Robert R., to Control Data Corporation. Pilot warning indicator system utilizing a transmission of signals within the absorption band of the oxygen spectrum. 3,680,122, Cl. 343-112.0ca.
Gramlich, Fritz, to Spitzer, Ludwig sen. KG. Bulk transporter. 3,679,082, Cl. 214-518.000.
Grammer, Maurine P.: *See—*
Nowicki, Carmen D. T.; and Grammer, Maurine P., 3,678,709.
Grana, Vito. Exercising stand. 3,679,203, Cl. 272-60.000.
Graner, Rolf G.: *See—*
Anderegg, Paul; and Graner, Rolf G., 3,679,522.
Grangaard, Orrin H., Jr.; and Selig, Ernest T., to Bison Instruments, Inc. Soil strain gage. 3,678,739, Cl. 73-88.50r.
Granger, James E.: *See—*
Hansen, Charles N.; Young, Morris D.; and Granger, James E., 3,679,593.
Granqvist, Carl-Erik, to Aga Aktiebolag. Distance measuring device. 3,680,101, Cl. 343-14.000.
Grapha Maschinenfabrik Hans Mueller AG: *See—*
Mueller, Hans, 3,679,072.
Graup, Josef. Fastener particularly for ski or mountaineering boots. 3,678,539, Cl. 24-68.000.
Graup, Josef. Strap holder consisting of two elements. 3,678,540, Cl. 24-70.0sk.
Graves, Jimmy J.: *See—*
Salcedo, Guido; and Graves, Jimmy J., 3,679,838.
Graves, Marlene D.: *See—*
Salcedo, Guido; and Graves, Jimmy J., 3,679,838.
Gray, William C., Jr., to Eastman Kodak Company. Photographic process which produces neutral dye image in diazotype material. 3,679,413, Cl. 96-49.000.
Graybill, Harold W.; Heider, James E.; and Sponseller, Harold P., to Owens-Illinois, Inc. Apparatus for impact injection molding of plastic articles. 3,679,341, Cl. 18-30.0ns.
Great Salt Lake Minerals and Chemicals Corporation: *See—*
Flint, Hans Gerhard; and Neitzel, Ulrich E. G., 3,679,376.
Grebnev, Nikolai Feodosovich: *See—*
Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.
Greco, Nicholas P., to Koppers Company, Inc. Preparation of dihydrocatechol from cyclohexanone. 3,679,753, Cl. 260-586.00b.
Green, William E., Jr., to Citizens and Southern National Bank, The. Apparatus for packaging coins. 3,678,650, Cl. 53-159.000.
Greenspan, Lawrence, to Engelhard Minerals & Chemicals Corporation. Mirror bright silver plating. 3,679,553, Cl. 204-43.000.
Greenwood, David L., to Litton Business Systems, Inc. Remotely controlled actuator. 3,679,878, Cl. 235-146.000.
Grenda, Edward P.: *See—*
Richardson, Stephen M.; and Grenda, Edward P., 3,678,880.
Grier, Nathaniel, to Merck & Co., Inc. Nitroalkyl-piperazines as antibacterial agents in aqueous paint solutions. 3,679,622, Cl. 260-29.70n.
Griffin, Jon H., to General Electric Company. Serial digital pulse phase interface driver and receiver. 3,680,050, Cl. 340-167.00r.
Griffin, Thomas Franklin: *See—*
McGee, James Newton; and Griffin, Thomas Franklin, 3,679,516.
Griggs, Ernest Lee, Jr.; and Porter, John David, to Du Pont de Nemours, E. I., and Company. Ring and bar tensioner. 3,679,153, Cl. 242-153.000.
Grigoleit Company, The: *See—*
Howie, Robert K., Jr., 3,679,252.
Grimm, James J.: *See—*
Dufour, Raymond J.; and Grimm, James J., 3,678,560.
Grimm, Richard C.: *See—*
Evans, Robert W.; Grimm, Richard C.; and Olstein, Myron A., 3,678,857.
Grimm, Werner; Hasserodt, Ulrich; and Olschewski, Karl-Heinz, to Shell Oil Company. Liquid storage tank. 3,679,086, Cl. 220-10.000.
Grober, Kurt, to Mannesmann-Meer Aktiengesellschaft. Device for the manufacture of welded steel pipe from steel of any grade. 3,679,856, Cl. 219-59.000.
Grobman, William: *See—*
Faith, Ruth L.; and Grobman, William, 3,679,876.
Grosch, Gottlieb W. Irrigation apparatus. 3,679,135, Cl. 239-183.000.
Grosche, Manfred. Mixing valve. 3,678,961, Cl. 137-636.200.
Gross, William R. Method and apparatus for raising and harvesting fish. 3,678,898, Cl. 119-3.000.
Grossman, James D.; Mookherjee, Braja D.; De Simone, Robert; and Theimer, Ernst T., to International Flavors & Fragrances Inc. Perhydro 1,4,9,9-tetramethyl-4,7-methandazulenones. 3,679,749, Cl. 260-586.00r.
Grote, George A., to National Bank and Trust Company of Central Pennsylvania; administrator, d.b.m.c.t.a. of the estate of Beach, Willard C.; deceased, and administrator c.t.a. of the estate of Beach, Mary B. Filter for moisture and oil vapor. 3,678,662, Cl. 55-387.000.
Groves, Donald W., to Ford Motor Company. Adjustable steering column. 3,678,778, Cl. 74-493.000.
Groves, Raymond Sturgis: *See—*
Wakefield, Norman; Alexander, Stuart John; Morrish, James Francis Gerrards Cross; Beck, William; Groves, Raymond Sturgis; and Harvey, Michael J., 3,678,644.
Gruber, Frank R., to Imagex Corporation, The. Photocomposition device. 3,678,819, Cl. 95-4.50r.
Gruenfeld, Norbert: *See—*
Wasley, Jan W. F.; and Gruenfeld, Norbert, 3,679,687.
Gruffaz, Max: *See—*
Bargain, Michel; Gruffaz, Max; Laurent, Serge; and Mallet, Maurice, 3,679,639.
Grunau, David L.: *See—*
Clark, Timothy M.; Shanfield, Henry; and Grunau, David L., 3,679,055.

Grunwaldt, Edgar, to Geigy Chemical Corporation. Method for treating glaucoma with alkyl gallates. 3,679,804, Cl. 424-308.000.

Grunzweig & Hartmann Aktiengesellschaft: *See*—
Krzyzanowski, Erich, 3,678,989.
Mechel, Fridolin; and Kummermehr, Hans, 3,679,443.

Guardian Industries Corporation: *See*—
McMaster, Harold A., 3,678,628.

Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., to Stromberg-Carlson Corporation. Camp-on busy checking and monitor circuit. 3,679,835, Cl. 179-27.0fd.

Guenther Systems, Inc.: *See*—
Kuehl, Guenther L., 3,679,074.

Guerster, Rene L., to Ametek, Inc. Device for moving an elongated body in the direction of its axis. 3,679,145, Cl. 242-54.00r.

Guillamon, Alfonso. Child's stroller. 3,679,222, Cl. 280-36.00r.

Gulf Oil Corporation: *See*—
Compton, Dinsdale M. J.; and Epstein, Barry D., 3,679,898.

Gulf Research & Development Company: *See*—
Galiano, Francis R.; and Smith, Wayne E., 3,679,561.

Gundersen, Ralph W., to Power Drive Corporation. Work positioner. 3,678,583, Cl. 33-125.000.

Gundlach, Robert W., to Xerox Corporation. Porous printing plate prepared from particulate photosensitive resinous material. 3,678,850, Cl. 101-170.000.

Gunn, John B.: *See*—
Beesley, James P.; and Gunn, John B., 3,679,959.

Gunter, James C., to Robertshaw Controls Company. Coiled spring separator device and method. 3,679,097, Cl. 221-163.000.

Gurev, Harold S.: *See*—
Black, James R.; and Gurev, Harold S., 3,680,028.

Gustafson, Walter R.; McMillen, William H.; and Lippel, Lewis, Jr., to United States of America, Navy. Scan conversion through electroluminescent storage panels. 3,680,087, Cl. 343-5.0sc.

Guthrie, William E.; and Parrinello, Anthony J. Lithographic printing plates and methods for preparation thereof. 3,679,412, Cl. 96-33.000.

Gutman, Anatoly Lvovich: *See*—
Rubinshtein, Sholom Yakovlevich; Babin, Mikhail Artemievich; Gutman, Anatoly Lvovich; Naumenko, Viktor Dmitrievich; Orlov, Evgeny Mikhailovich; Presman, Vladimir Alexandrovich; Maev, Veniamin Evnovich; and Bondarenko, Fedor Alexeevich, 3,678,664.

Gutridge, Jack E., to Pullman Incorporated. Articulated motorized truck train. 3,678,864, Cl. 105-400.00r.

Gutshall, Charles E., to Illinois Tool Works Inc. Panel insert device. 3,678,980, Cl. 151-41.700.

Guyaux, James R.; Le Duc, Donald; and McDonald, Dean T., to FMC Corporation. Trailer. 3,679,075, Cl. 214-84.000.

Gynn, Gilbert M.: *See*—
Berry, David A.; and Gynn, Gilbert M., 3,679,727.

Haas, Werner E. L.: *See*—
Adams, James E.; Leder, Lewis B.; and Haas, Werner E. L., 3,679,290.

Haberland, Erich, and Perkow, Werner, to Norddentsche Affinerie. Continuous manufacture of cuprous chloride. 3,679,359, Cl. 23-97.000.

Habermeier, Juergen; Batzer, Hans; and Porret, Daniel, to Ciba-Geigy AG. Diglycidyl ethers. 3,679,681, Cl. 260-256.40c.

Hack, Peter; Hass, Karl; and Schinke, Georg, to Dynamit Nobel Aktiengesellschaft. Process for the manufacture of shaped articles of zirconium corundum. 3,679,383, Cl. 51-309.000.

Hagel, Leo J.: *See*—
Noel, Leona M.; and Hagel, Leo J., 3,678,943.

Hagemann, Hermann, to Farbenfabriken Bayer Aktiengesellschaft. Chloro-oxycarbonyl isocyanates. 3,679,743, Cl. 260-545.00r.

Hagemeyer, Hugh J., Jr.; and Park, Vernon K., to Eastman Kodak Company. Olefin polymerization process and catalyst. 3,679,775, Cl. 260-878.00b.

Hague, Robert Z.; Laucks, Howard H.; and Mastropole, Alfred J., to Moog, Inc. Quick tool change mechanism for machine tools. 3,678,801, Cl. 90-11.00d.

Hahm, Paul Timothy, to Eastman Kodak Company. Container with means for defoaming foaming liquids. 3,679,600, Cl. 252-361.000.

Hahn, Ernest A.: *See*—
Parker, Gordon M.; Wismer, Marco; and Hahn, Ernest A., 3,679,731.

Haije, Johan Arend Frederik. Tooth brush. 3,678,528, Cl. 15-167.00r.

Halcon International, Inc.: *See*—
Golden, Richard L.; and Mazzella, Gerald, 3,679,751.

Hale, Edith A. Fluid pollution eradicator system including an air bubble scrubbing unit. 3,678,657, Cl. 55-222.000.

Hall, Roger D.; and Clasby, David N., to Bendix Corporation, The. Low profile antenna mounted on a watercraft. 3,680,131, Cl. 343-710.000.

Halophane Company, Inc.: *See*—
Franck, Kurt, 3,679,889.
Quack, Wilbert, 3,679,891.

Halpern, Samuel Walter, to Bell Telephone Laboratories, Incorporated. Three-channel FM stereo transmission. 3,679,832, Cl. 179-15.0bt.

Halverson, Henry J.: *See*—
Andrew, Eugene A.; and Halverson, Henry J., 3,679,782.

Hamao, Umezawa; Shinichi, Kondo; Kenji, Maeda; Tomio, Takeuchi; and Masa, Hamada, to Zaidan Hojin Biseibutsu Kagaku Kai. Negamycin. 3,679,742, Cl. 260-534.00m.

Hamerl, Arthur John. Coupling assembly. 3,679,243, Cl. 287-21.000.

Hamermesh, Bernard: *See*—
Hansen, David O.; Altshuler, Saul; Bernstein, William; and Hamermesh, Bernard, 3,679,897.

Hamilton, Charles Eugene: *See*—
Teal, James L.; Hamilton, Charles Eugene; and Clifford, Dennis A., 3,679,364.

Hamilton, David C., to Ramsey Controls, Inc. Buffer amplifier and voltage regulating circuit. 3,679,961, Cl. 323-8.000.

Hamlin, David R.; and Torpey, William A., to Eastman Kodak Company. Web turning and guiding apparatus. 3,679,116, Cl. 226-197.000.

Hammond, Philip G.: *See*—
Nissen, Walter D.; and Hammond, Philip G., 3,679,094.
Nissen, Walter D.; and Hammond, Philip G., 3,679,095.

Hammonds, James C.: *See*—
O'Leary, Walter E.; Thornton, Duane V.; Hammonds, James C.; and Dare, Roy R., 3,678,866.

Hanchett, George D., to RCA Corporation. Alarm circuit. 3,680,068, Cl. 340-213.

Handy, Robert M.; Angello, Stephen J.; Malmberg, Paul R.; and O'Keeffe, Terence W., to Westinghouse Electric Corporation. Electron beam fabrication system and process for use thereof. 3,679,497, Cl. 156-2.000.

Hanes Corporation: *See*—
Safrit, Sam C., 3,678,514.

Hansen, Charles N.; Young, Morris D.; and Granger, James E., to Wasatch Chemical Company. Stripping of condensation polymers with an alkoxide. 3,679,593, Cl. 252-170.000.

Hansen, David O.; Altshuler, Saul; Bernstein, William; and Hamermesh, Bernard, to TRW Inc. Laser bombardment of microparticle beam for producing atomic particles in the form of a beam or an expanding cloud. 3,679,897, Cl. 250-42.000.

Hansen, Gunnar W., to Ford Motor Company. Air cleaner remote from engine and having integrated fuel vapor adsorption means. 3,678,663, Cl. 55-387.000.

Hansen, Robert N.; Hempel, George T.; and Noesges, Raymond. Interior scaffolding arrangement. 3,679,026, Cl. 182-132.000.

Hansen, Wolfgang, to Motoren- und Turbinen-Union Munchen GmbH. Method for connecting cooled or uncooled rotor blades to the blade rim of an associated disc. 3,678,555, Cl. 29-156.80r.

Hardcast, Inc.: *See*—
Young, Chester C., 3,679,456.

Hardman, Carl C., to Westinghouse Electric Corporation. Iron electrode. 3,679,482, Cl. 136-25.000.

Harper Associates Inc.: *See*—
Harper, Kenneth B.; and Tremblay, Hubert J., 3,679,923.

Harper, Kenneth B.; and Tremblay, Hubert J., to Harper Associates Inc. Automatic work repeating mechanism. 3,679,923, Cl. 310-128.000.

Harper, Patrick D. Floatless fluid level gauge. 3,678,749, Cl. 73-304.00r.

Harrell, Jerald R.; Logothetis, Anestis L.; and Verbanc, John J., to Du Pont de Nemours, E. I., and Company. Hydroxylated alpha-olefin/non-conjugated diene polymer. 3,679,627, Cl. 260-41.500.

Harris, Frederick John: *See*—
Jack, James; Drake, John; Thompson, David Crompton; and Harris, Frederick John, 3,679,391.

Harris, Paul E.; and Mader, George E., to Syracuse University Research Corporation. Large dynamic range coherent radar processor. 3,680,098, Cl. 343-7.700.

Harris, Richard Allen: *See*—
Campbell, Douglas Earl; and Harris, Richard Allen, 3,679,310.

Harris, Stephen E., to Chromatix, Inc. Tunable acousto-optic method and apparatus. 3,679,288, Cl. 350-149.

Hart, Joseph M.: *See*—
Becker, Albert H.; Hart, Joseph M.; and Quaal, John A., 3,680,016.

Hartley, Newell D. Ball and socket game device. 3,679,211, Cl. 273-144.00b.

Hartman, William A., Jr.; and Siegler, Manny, to General Electric Company. Off-gas burner system. 3,679,372, Cl. 23-277.00c.

Hartmann, Hellmut: *See*—
Hartmann, Hellmut; and Budan, Gerhard, 3,679,362.

Hartmann, Hellmut; and Budan, Gerhard, to Hartmann, Hellmut and Wintershall Aktiengesellschaft. Process for making magnesium oxide or hydroxide from magnesium containing raw materials. 3,679,362, Cl. 23-201.000.

Harvey, Don E.: *See*—
Rohrberg, Roderick G.; and Harvey, Don E., 3,678,781.

Harvey, Kelsey I. Ceramic product from fly ash and method of making same. 3,679,441, Cl. 106-41.000.

Harvey, Michael J.: *See*—
Wakefield, Norman; Alexander, Stuart John; Morrish, James Francis Gerrards Cross; Beck, William; Groves, Raymond Sturgis; and Harvey, Michael J., 3,678,644.

Hasegawa, Katsue: *See*—
Yoshimura, Susumi; Ito, Yoshimasa; Aaakawa, Shirow; and Hasegawa, Katsue, 3,679,944.

Hasegawa, Yoshinori: *See*—
Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; Ushiyama, Keiichi; Shinoda, Hirotaka; and Hasegawa, Yoshinori, 3,679,730.

Hasegawa, Yukio: *See*—

Asahi, Matahiko; Murakami, Hisamichi; Hasegawa, Yukio; Matsui, Hideo; and Takayanagi, Eifu, 3,679,348.

Hashimoto, Hideo; Kasahara, Nobuo; and Yoshino, Toshio. Deodorization device. 3,679,369, Cl. 23-284.000.

Hashimoto, Saburo: *See—*
Strauss, Robert E.; and Hashimoto, Saburo, 3,679,392.

Haspert, John C., to Commercial Shearing & Stamping Company. Methods and apparatus for installing tunnel liners. 3,678,694, Cl. 61-84.000.

Hass, Karl: *See—*
Hack, Peter; Hass, Karl; and Schinke, Georg, 3,679,383.

Hasserodt, Ulrich: *See—*
Grimm, Werner; Hasserodt, Ulrich; and Olschewski, Karl-Heinz, 3,679,086.

Hatch, Melvin J.: *See—*
Jones, Griffin D.; Geyer, Gerald R.; and Hatch, Melvin J., 3,679,748.

Hatcher, John c., to Cole Manufacturing Company. Lifting arrangement for agricultural implement frame. 3,679,224, Cl. 280-43.230.

Haulotte, Georges. Assembly of block pulleys provided with a load measuring system. 3,679,012, Cl. 177-147.000.

Hawver, Ira M. Weighing scale assembly. 3,679,011, Cl. 177-134.000.

Hayashi, Masahiro: *See—*
Taniguchi, Tetsuji; Fukui, Kakichi; Imai, Shiro; Hayashi, Masahiro; and Seki, Koichi, 3,678,722.

Haydon, Arthur W., to Tri-Tech, Inc., mesne. Cam actuated switch assembly. 3,679,988, Cl. 307-133.000.

Haymore, Ralph B., to Envirotech Corporation. Flotation apparatus. 3,679,056, Cl. 210-221.000.

Hays, Robert G., to Motorola, Inc. Gaseous non-preferential etching of silicon. 3,679,502, Cl. 156-17.000.

Hayward, Norman G. Means for illumination of gun sights and the like. 3,678,590, Cl. 33-241.000.

Healey, Anthony J.: *See—*
Boothe, Willis A.; and Healey, Anthony J., 3,678,953.

Heaton, James W.: *See—*
Eversole, William C.; and Heaton, James W., 3,678,632.

Heberlein & Co., AG: *See—*
Slavik, Valter, 3,678,579.

Heckler & Roch GmbH, Firma: *See—*
Seidel, Alex; Moller, Tilo; and Weldle, Helmut, 3,678,800.

Hedges, Charles P. Apparatus for providing conversion between analog and digital values. 3,680,079, Cl. 340-347.00p.

Hedges, Robert H., to Rockwell Manufacturing Company. Pipe cleaning apparatus. 3,678,948, Cl. 134-167.00c.

Hedrick, Geoffrey S., to Lear Siegler, Inc. Brushless D. C. motor with rate control of position sensor. 3,679,954, Cl. 318-254.000.

Heid, Raymond G.: *See—*
Kaufman, Jack B.; and Heid, Raymond G., 3,678,603.

Heider, James E.: *See—*
Graybill, Harold W.; Heider, James E.; and Sponseller, Harold P., 3,679,341.

Heikel, Rolf Rainer. Window fitting. 3,678,626, Cl. 49-402.000.

Heineman, William R.: *See—*
Gilby, Patricia G.; and Heineman, William R., 3,679,557.

Heinemann Electric Company: *See—*
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Heinrich Koppers Gesellschaft mit beschrankter: *See—*
Preusser, Gerhard; Schulze, Martin; and Richter, Klaus, 3,679,579.

Heise, Georg, to Dornier A.G. Pulsation power unit. 3,678,692, Cl. 60-247.000.

Heitz, Alfred J.: *See—*
Rogers, Leo C.; Nikirk, Roger G.; and Heitz, Alfred J., 3,679,470.

Heitz, Robert G.: *See—*
Brown, William E.; Heitz, Robert G.; and Levine, Charles A., 3,679,480.

Helava, Uuno V.; and Forrest, Robert B., to Bendix Corporation, The. Photogrammetric apparatus. 3,678,582, Cl. 33-20.00d.

Hellmuth, Walter W., to Texaco Inc. Overbased alkaline earth metal sulfonate lube oil composition manufacture. 3,679,584, Cl. 252-33.400.

Hempel, George T.: *See—*
Hansen, Robert N.; Hempel, George T.; and Noesges, Raymond, 3,679,026.

Hendrickson, Roger L. Collapsible trap for crustaceans. 3,678,612, Cl. 43-66.000.

Henkel & Cie G.m.b.H.: *See—*
Schnegelberger, Harald; and Altenschopfer, Theodor, 3,679,589.

Hensler, Paul, to Porsche, Dr.-Ing. H.c.F., K.G., Firma. Installation in internal combustion engines for preventing the escape of fuel out of the mixture formation system into the atmosphere. 3,678,912, Cl. 123-136.000.

Hentschel, John E., to Varian Associates, mesne. Crossed-field noise generator tube employing a high magnetic field intensity. 3,679,993, Cl. 331-78.000.

Herbenar, Edward J., to TRW Inc. Ball joint. 3,679,248, Cl. 287-87.000.

Hercules Incorporated: *See—*
Gilby, Patricia G.; and Heineman, William R., 3,679,557.

Herd, David P., to Rockwell Manufacturing Company. Well completion and apparatus. 3,678,996, Cl. 166-.500.

Hereford, John R., to U.S. Dynamics Inc., mesne. Microfilm recording system. 3,679,305, Cl. 355-65.000.

Herger, Zoltan L.; and Olmsted, Dennis R., to Storage Technology Corporation. Magnetic tape head skew adjustment. 3,679,841, Cl. 179-100.2ca.

Herman, Elvin E.; and McCord, Henry L., to Hughes Aircraft Company. Non-coherent radar system with means to correct the phase of the return signal. 3,680,099, Cl. 343-7.700.

Hermann, Gunter; and Schmidt, Karl-Julius, to Farbenfabriken Bayer Aktiengesellschaft. Methods of controlling rodents and leporine animals. 3,679,796, Cl. 424-211.000.

Hermans, Hubert Karel Frans; Knaeps, Alfonsus Gillielmus; and Willems, Joannes Josephus Maria, to Janssen Pharmaceutica N.V. N-(bicycloamino-alkanoyl)-anilines. 3,679,686, Cl. 260-287.00r.

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Hinderaker, Philip D.; and Nelson, Karl E., to Minnesota Mining and Manufacturing Company. Magnetic insect screen. 3,679,505, Cl. 156-71.000.

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Hino, Hiroyuki; Asakuno, Hiroyoshi; and Yamada, Tetsuya, to Chisso Corporation. Apparatus for stretching a tubular film of thermoplastic synthetic polymeric resin. 3,678,545, Cl. 26-55.000.
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Hohn, Gerhard; Lingnau, Josef; and Rettemeier, Wulf, to Gestra KSB Vertriebsgesellschaft mbH & Co. Condensation discharger. 3,679,131, Cl. 236-59.000.
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Ingram, John Anthony, to National Research Development Corporation. Carrier devices for shoulder-strap support on the back. 3,679,108, Cl. 224-8.00r.
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Inoue, Kiyoshi. Loudspeaker system. 3,679,833, Cl. 179-16.00p.
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Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*

Inaba, Kohsaku; Yoshida, Seisaku; and Matsuura, Shoji, 3,679,005.
Ishiwata, Samford P. Submerged multistage pump usable as propulsion unit. 3,678,689, Cl. 60-221.000.
Isola, Norman R.: *See*—
Isola, Raymond O.; and Isola, Norman R., 3,678,588.
Isola, Raymond O.; and Isola, Norman R. Wall outlet box locater. 3,678,588, Cl. 33-180.00r.
Ithaca Textiles, Inc.: *See*—
Wehrmann, Nicholas, 3,678,515.
Ito, Akio. Method and apparatus for increasing output of car engine and purifying exhaust gas. 3,678,908, Cl. 123-119.00d.
Ito, Shin; and Kubo, Seitoku, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic control system for automatic transmission. 3,678,787, Cl. 74-864.000.
Ito, Takeshi: *See*—
Kubo, Nobuzo; and Ito, Takeshi, 3,679,500.
Ito, Yoshimasa: *See*—
Yoshimura, Susumi; Ito, Yoshimasa; Aaakawa, Shirow; and Hasegawa, Katsue, 3,679,944.
ITT Industries, Inc.: *See*—
Ostwald, Fritz; Bender, Alfred; and Nonn, Gerhard, 3,678,954.
Jack, James; Drake, John; Thompson, David Crompton; and Harris, Frederick John, to Imperial Chemical Industries Limited and Scottish Agricultural Industries Limited. Fertilizer compositions. 3,679,391, Cl. 71-64.00e.
Jack-O-Line Corporation: *See*—
O'Brien, John C., 3,678,974.
Jackson, Henry G.: *See*—
Van Doornewaard, Hans; and Jackson, Henry G., 3,679,786.
Jackson, Robert G. Stretch-draw tubing process. 3,678,727, Cl. 72-367.000.
Jacobson, John E.: *See*—
Carrano, Andrew J., Jr.; Cotsalas, Stephen N.; and Jacobson, John E., 3,679,208.
Jacquelin, Guy, to Societe d'Exploitation des Brevets Granofibre. Method of treating suspension of fibers to form fibrous aggregates. 3,679,542, Cl. 162-1.000.
Jacques, Jean-Marie; and Beniada, Maurice, to U.S. Philips Corporation. Arrangement for dimming at least two parallel-arranged discharge lamps. 3,679,935, Cl. 315-201.000.
Jacuzzi, Kenneth A.: *See*—
Jacuzzi, Roy A.; and Jacuzzi, Kenneth A., 3,679,257.
Jacuzzi Research Inc.: *See*—
Jacuzzi, Roy A.; and Jacuzzi, Kenneth A., 3,679,257.
Jacuzzi, Roy A.; and Jacuzzi, Kenneth A., to Jacuzzi Research Inc. Foldable wheel chair. 3,679,257, Cl. 297-42.000.
Jaffe, Edward E.: *See*—
Dhaliwal, Pritam Singh; and Jaffe, Edward E., 3,679,684.
Jager, Georg; and Geiger, Rolf, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. N,N-Disubstituted aminoethylcarbamyl protecting groups for cysteine. 3,679,655, Cl. 260-112.500.
James, Glen S.: *See*—
Bailey, Robert C.; Estes, Harry A.; James, Glen S.; Klug, James R.; Montillon, Henry A.; Myring, Verne E.; Robertson, Orville H.; Sargeant, Blaine W.; and Sorensen, Neal E., 3,679,200.
Jammet, Jlan Firmin, to Societe des Accumulateurs Fixes et de Traction. Process for mass production of batteries of electrochemical generators of stacked flat constituents. 3,679,489, Cl. 136-175.000.
Jania, Zbigniew J., to Ford Motor Company. Skid control apparatus for vehicle brake system. 3,679,270, Cl. 303-21.00f.
Jank, Reinhard, to U.S. Philips Corporation, mesne. Apparatus with an oscillating armature motor. 3,679,921, Cl. 310-37.000.
Janosi, Francis L., to Ford Motor Company. Variable ratio brake pedal. 3,678,779, Cl. 74-516.000.
Janssen, Donovan M.; and Meyer, Clarence G., to International Business Machines Corporation. Cartridge lock actuator. 3,679,283, Cl. 312-319.000.
Janssen Pharmaceutica N.V.: *See*—
Hermans, Hubert Karel Frans; Knaeps, Alfonsus Gillielmus; and Willems, Joannes Josephus Maria, 3,679,686.
Jansson, Birger F., to Case, J. I., Company. Braking method and apparatus. 3,679,027, Cl. 188-74.000.
Janza, Frank J.: *See*—
Killion, Derling G.; and Janza, Frank J., 3,680,111.
Japan Atomic Energy Research Institute: *See*—
Tabata, Yoneho; and Oizumi, Chihiro, 3,679,562.
Japan Exlan Company Limited: *See*—
Takeya, Kenji, 3,679,641.
Japan Radio Company, Limited: *See*—
Ogawa, Juro; and Fujimoto, Yoshiaki, 3,679,976.
Japan Spectroscopic Co., Ltd.: *See*—
Hiragaki, Shigeho; and Mochida, Yoshihiro, 3,679,309.
Jayaraman, Ponnusami: *See*—
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,679,657.
Jefferson Chemical Company, Inc.: *See*—
Tomomatsu, Hideo, 3,679,723.
Jenkins, Keith T., to Rush, C. J., Limited. Control system for revolving door. 3,678,623, Cl. 49-43.000.
Jenkins, Robert C. Lug template. 3,679,266, Cl. 301-9.0dn.
Jenkins, Robert E.: *See*—
Houser, George G.; and Jenkins, Robert E., 3,680,103.
Jenny, Walter: *See*—
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,679,657.
Jenoptik Jena G.m.b.H.: *See*—
Hofmann, Christian; and Neumann, Jorg, 3,679,294.
Jensen, Klaus: *See*—
Wienand, Michael; Jensen, Klaus; Primessing, Franz; and Alfter, Franz-Werner, 3,679,531.
Jernigan, Marvin E.: *See*—
Newman, Joel S.; and Jernigan, Marvin E., 3,679,295.
Jerobee Industries, Inc., mesne: *See*—
Weglin, Walter; and Wildebour, Charles W., 3,678,577.
Jerrold Electronics Corporation: *See*—
Leitner, Robert T.; and Drake, John E., 3,680,146.
Jervis, Roy, to Dunlop Holdings Limited. Cellular structures. 3,679,552, Cl. 204-37.00r.
Jesnitzer, Friedrich Erdmann; and Rehfeldt, Dietrich, to Redemat S.A. Apparatus for controlling electric welding processes. 3,679,865, Cl. 219-131.00r.
Joch, Wilhelm: *See*—
Termin, Erich; Rogler, Walter; Joch, Wilhelm; and Honigschmid-Grossich, Rudiger, 3,679,724.
Johnson & Johnson: *See*—
Kalwaites, Frank, 3,679,535.
Kalwaites, Frank, 3,679,536.
Johnson, Clarence A., to Hydrocarbon Research, Inc. Two stage counter-current hydrogenation of coal. 3,679,573, Cl. 208-10.000.
Johnson, Douglas A.: *See*—
Bayle, Guy P.; and Johnson, Douglas A., 3,680,094.
Johnson, Ernest E. Electrical outlet trolley. 3,680,030, Cl. 339-2.00r.
Johnson Hydraulic Equipment Co.: *See*—
Stanke, Rudi G., 3,678,665.
Johnson, Lennart B., to Teradyne, Inc. Electrical connector with vibration resistance. 3,680,038, Cl. 339-65.000.
Johnson, Peter D., to General Electric Company. High intensity far U.V. radiation source. 3,679,928, Cl. 313-225.000.
Johnston, Thomas F.: *See*—
Biswell, Charles B.; and Johnston, Thomas F., 3,679,380.
Jones, Griffin D.; Geyer, Gerald R.; and Hatch, Melvin J., to Dow Chemical Company, The. 2-Aminomethyl-1,3-butadiene monomers. 3,679,748, Cl. 260-583.00h.
Jones, Howard S., Jr.; Witte, Joseph J.; and Morlock, Harry K., to United States of America, Army. Re-entry vehicle nose cone with antenna. 3,680,130, Cl. 343-708.000.
Jones, Jerry L.: *See*—
Brinks, Floyd J.; Day, Lucian P., Jr.; and Jones, Jerry L., 3,678,867.
Jones, John R.: *See*—
Roberts, Richard A.; and Jones, John R., 3,679,157.
Jones, William Dyfrig; and Peel, Eric. Coolers. 3,679,194, Cl. 266-32.000.
Jorgensen, Arnold J.; Bewley, Lawrence L.; and White, Kenneth H., to Burroughs Corporation. Integral electrical power distribution network having stacked plural circuit planes of differing characteristic impedance with intermediate ground planes for separating circuit planes. 3,680,005, Cl. 333-6.000.
Jubelt, Warren L., to General Motors Corporation. Test device for trim assemblies. 3,678,738, Cl. 73-88.00b.
Juengel, Richard O.: *See*—
Humphrey, Harold D.; and Juengel, Richard O., 3,680,073.
Juge, Frank E., Jr.: *See*—
Wantland, Charles F.; Juge, Frank E., Jr.; and Hinds, William H., 3,679,577.
Juillard, Yves, to Societe Alsacienne de Constructions Macaniques de and Mulhouse. Shuttleless loom. 3,678,968, Cl. 139-127.00r.
Jupiter, Bernard; and Kazakowitz, Barry D. Device for forming hamburger patties. 3,679,167, Cl. 249-173.000.
Jurgen-Lohmann, Ludwig; and Holtermann, Rolf, to Farbwerke Hoechst Aktiengesellschaft. Process for discharging solids treated with liquids from vertical columns. 3,679,268, Cl. 302-14.000.
K-Tron Corporation: *See*—
Bullivant, Kenneth W., 3,679,010.
Kabushiki Kaisha Hattori Tokeiten: *See*—
Kitai, Kiyoshi, 3,678,821.
Kabushiki Kaisha Meidensha: *See*—
Himi, Hitoshi; Shinmon, Yasuhiro; and Teshima, Tokuro, 3,679,852.
Kabushiki Kaisha Osaka Packing Seizosho: *See*—
Kubo, Kazuhiko, 3,679,446.
Kabushiki Kaisha Ricoh: *See*—
Katagiri, Nobuyuki; and Akiyama, Hideaki, 3,679,453.
Kawazu, Motoaki, 3,679,292.
Ohta, Wasaburo; Kasuya, Kazuhiko; and Yamauchi, Masayuki, 3,678,895.
Kabushiki Kaisha Suwa Seikosha: *See*—
Fujita, Kinji, 3,678,680.
Miyasaka, Mamoru; Kurita, Hirohisa; and Furihata, Hideo, 3,678,682.
Saito, Toshiaki; and Oki, Toshihiko, 3,678,681.
Kabushikikaisha Copal: *See*—
Sato, Takayoshi, 3,678,823.
Kabushikikaisha Tokyo Keiki(Tokyo Keiki Co., Ltd.): *See*—
Hirokawa, Yoichi; and Sato, Masatoshi, 3,679,960.

Kaczynski, Clarence J.: *See—*
Bernas, Richard J.; and Kaczynski, Clarence J., 3,679,170.

Kadner, Gunter: *See—*
Leuschner, Gerhard; Pietsch, Peter; and Kadner, Gunter, 3,678,648.

Kaim, John W.: *See—*
Mulcahy, Harry W.; Bushnell, Eldon W.; and Kaim, John W., 3,679,028.

Kaiser Aluminum & Chemical Corporation: *See—*
Langewis, Cornelis, 3,678,725.

Kaiser, Hans: *See—*
Lowenfeld, Rudolf; and Kaiser, Hans, 3,679,350.

Kaishita, Yoshiaki; and Sugimoto, Shigeo, to Tiger Vacuum Bottle Industrial Company, Limited. Ice shaver. 3,679,140, Cl. 241-95.000.

Kalatucka, Stephen: *See—*
Bergey, John M. K.; and Kalatucka, Stephen, 3,680,046.

Kalle Aktiengesellschaft: *See—*
Klenk, Ludwig; Strutzel, Hans; and Sobottka, Richard, 3,679,435.
Stroszynski, Joachim, 3,679,418.

Kallio, Frank H.: *See—*
Baker, Donald H.; and Kallio, Frank H., 3,678,593.

Kalopissis, Gregoire: *See—*
Charle, Roger; Kalopissis, Gregoire; and Zviak, Charles, 3,679,102.

Kalugin, Konstantin Yakovlevich: *See—*
Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.

Kalvoda, Jaroslav: *See—*
Anner, Georg; and Kalvoda, Jaroslav, 3,679,716.

Kalwaites, Frank, to Johnson & Johnson. Nonwoven fabric comprising discontinuous groups of small holes connected by ribbons defining large holes. 3,679,535, Cl. 161-109.000.

Kalwaites, Frank, to Johnson & Johnson. Nonwoven fabric comprising buds plus bundles connected by aligned fibers including bundles. 3,679,536, Cl. 161-109.000.

Kammermeier, Jurgen: *See—*
Gossens, Hubert; Kammermeier, Jurgen; and Kloker, Werner, 3,679,539.

Kamogawa, Yoshiro: *See—*
Kishikawa, Kanichi; Kuwata, Takeo; Kinoshita, Kentaro; Tsuchiya, Takao; and Kamogawa, Yoshiro, 3,678,721.

Kamp, Kenneth Albert Walters: *See—*
Dillon, Stanley Bernard; Mowbray, Dorian Farrar; and Kamp, Kenneth Albert Walters, 3,679,846.

Kanai, Eizo, to Asahi Glass Co., Ltd. Method and apparatus for the manufacture of flat glass. 3,679,389, Cl. 65-99.00a.

Kaneko, Hirokazu, to Ricoh Co., Ltd. Automatic flash selection device for cameras. 3,678,829, Cl. 95-11.00r.

Kanoh, Teruchika: *See—*
Matsugu, Tomoyuki; Notomi, Ryota; and Kanoh, Teruchika, 3,678,546.

Karikomi, Masahiro, to Nippon Telegraph and Telephone Public Corporation. Antenna device. 3,680,141, Cl. 343-758.000.

Karkalas, John: *See—*
Clayton, David Henry; and Karkalas, John, 3,679,431.

Karl Mayer Textilmaschinenfabrik GmbH: *See—*
Schneider, Harald; and Wicha, Cornel, 3,678,711.

Kasahara, Nobuo: *See—*
Hashimoto, Hideo; Kasahara, Nobuo; and Yoshino, Toshio, 3,679,369.

Kasper, George P., to Eastman Kodak Company. Azo dye-forming system including a boric acid ester. 3,679,421, Cl. 96-91.00r.

Kasugai, Tsuneo; and Minagawa, Nobuhiko, to Fuji Photo Film Co., Ltd. Process for the production of a support for a photographic sensitive material. 3,679,455, Cl. 117-47.000.

Kasuya, Kazuhiko: *See—*
Ohta, Wasaburo; Kasuya, Kazuhiko; and Yamauchi, Masayuki, 3,678,895.

Katagiri, Nobuyuki; and Akiyama, Hideaki, to Kabushiki Kaisha Ricoh. Developing method and device therefor for use in wet type electronic or electrostatic photography. 3,679,453, Cl. 117-37.0le.

Katz, Norman, to Goodman, H., & Sons, Inc. Dual barrettes. 3,678,946, Cl. 132-48.00r.

Kauffman, Melvin R., to General Electric Company. Method and structure for cushioning the operation of a movable rack in a dishwasher. 3,679,282, Cl. 312-311.000.

Kaufman, Jack B.; and Heid, Raymond G. Ski boot with pressure compensating brace. 3,678,603, Cl. 36-2.5al.

Kaufman, Melvin Murray, to RCA Corporation. Decoder circuit. 3,679,911, Cl. 307-251.000.

Kaufman, Paul Richard, to Lubrizol Corporation, The. Secondary oil recovery method using N-sulfohydrocarbon-substituted acrylamide polymers as viscosity increasing agents. 3,679,000, Cl. 166-273.000.

Kautz, Murrell F., to Honeywell Inc. Thermostat using the heat anticipation heater as a part of the mechanical connection between the temperature responsive element and switches operating member. 3,680,023, Cl. 337-377.000.

Kawabe, Tsuneo, to Aisin Seiki Kabushiki Kaisha. Hydraulic brake system. 3,679,030, Cl. 188-345.000.

Kawai, Mitsuru, to Hirose Electric Co., Ltd. Coupling device for an electric connector. 3,680,033, Cl. 339-46.000.

Kawashima, Kenya: *See—*
Morita, Katsura; and Kawashima, Kenya, 3,679,662.

Kawazu, Motoaki, to Kabushiki Kaisha Ricoh. Continuously-variable-magnification afocal lens system. 3,679,292, Cl. 350-184.000.

Kayex Corporation: *See—*
Bender, David L.; and Lane, Richard L., 3,678,917.

Kazakowitz, Barry D.: *See—*
Jupiter, Bernard; and Kazakowitz, Barry D., 3,679,167.

Kaznoff, Alexis I.: *See—*
Hill, Howard W.; Kaznoff, Alexis I.; and Marlowe, Mickey O., 3,679,596.

Keck, Harley B.: *See—*
Andler, Richard C.; and Keck, Harley B., 3,679,518.

Keegan, Robert R.: *See—*
Graham, Walton; and Keegan, Robert R., 3,680,122.

Keeler, Richard A.; and Eckstein, Arthur, to Chemex Corporation. Warmer stand for a select number of fluid containers. 3,679,869, Cl. 219-432.000.

Keith, Carl D.: *See—*
Dalson, Milton H.; Gallagher, James P.; Keith, Carl D.; and Pfefferle, William C., 3,679,578.

Keldrauk, Walter. Fluid power unit. 3,679,334, Cl. 418-142.000.

Kelleher, Kenneth S.: *See—*
Barron, Roger L.; Kelleher, Kenneth S.; and Vieth, George C., Jr., 3,680,126.

Keller, Sherman R.: *See—*
Blair, George R.; and Keller, Sherman R., 3,679,559.

Kelly, Robert M.: *See—*
Carothers, Charles H.; and Kelly, Robert M., 3,679,938.

Kelsey-Hayes Company: *See—*
Trindle, Terry LaVern, 3,679,188.

Keneman, Scott Allen; and Miller, Arthur, to RCA Corporation. Electro-optical memory employing ferroelectric element. 3,680,060, Cl. 340-173.200.

Kenji, Maeda: *See—*
Hamao, Umezawa; Shinichi, Kondo; Kenji, Maeda; Tomio, Takeuchi; and Masa, Hamada, 3,679,742.

Kennametal Inc.: *See—*
Eversole, William C.; and Heaton, James W., 3,678,632.

Kennametal Inc., mesne: *See—*
Goodfellow, Robert D., 3,679,009.

Kennedy, James A.: *See—*
Blessin, Ronald W.; and Kennedy, James A., 3,680,051.
Blessin, Ronald W.; and Kennedy, James A., 3,680,057.

Kennedy, Peter J. to Ford Motor Company. Light reflection preventive device. 3,679,887, Cl. 240-8.160.

Kenney, Frank D.; trustee: *See—*
Banning, Thomas A., Jr., 3,679,813.

Kent, Arthur P.: *See—*
Marks, Alvin M.; Marks, Mortimer M.; and Kent, Arthur P., 3,679,451.

Kereluk, Karl: *See—*
Brendgord, Thomas; and Kereluk, Karl, 3,678,921.

Kerkau, La Vern H. Valve actuator assembly. 3,679,172, Cl. 251-229.000.

Kerr, John W.: *See—*
Bunker, William H.; Kerr, John W.; Mitrofanoff, Nicholas S.; and Swearingen, Kent W., 3,680,054.

Ketterer, Stanley J.: *See—*
Killinger, Karl H.; and Ketterer, Stanley J., 3,678,871.

Key, Robert L., III; and Christy, Melvin G., to Liggett & Meyers Incorporated. Method of treating tobacco with flavorants in a pneumatic system. 3,678,939, Cl. 131-144.000.

Khirdzheiv, Sergei Grigorievich: *See—*
Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.

Kiefer, Hans, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Lactam-N-carboxylic acid chlorides and their production. 3,679,665, Cl. 260-239.30a.

Kienzle Apparate GmbH: *See—*
Rahn, Horst, 3,679,922.

Kifer, Paul E.: *See—*
Mohrman, Robert K.; Kifer, Paul E.; and Oborsh, Edward V., 3,679,429.

Kii, Toshimichi; and Suka, Motoshi, to Mitsui Toatsu Chemicals Incorporated. Method of polymerizing styrene. 3,679,651, Cl. 260-93.50s.

Kikuchi, Makoto, to Toyoda Machine Works, Limited. Truing device for grinding wheel with rotating cup-shaped truing cutter. 3,678,915, Cl. 125-11.000.

Killay, Swansea: *See—*
Davies, Gordon Idris; Killay, Swansea; and Williams, Terence, 3,678,888.

Killinger, Karl H.; and Ketterer, Stanley J., to Singer Company, The. Overedging device for sewing machines. 3,678,871, Cl. 112-162.000.

Killion, Derling G.; and Janza, Frank J., to Teledyne Ryan Aeronautical Company. Radiometric aircraft landing system. 3,680,111, Cl. 343-100.0me.

Kilmer, Earl E., to United States of America, Navy. Quick disconnect explosive connector assembly. 3,678,853, Cl. 102-17.000.

Kilner, George E., to Filper Corporation. Rotary can separator. 3,679,049, Cl. 209-71.000.

Kilpatrick, John E.: *See—*
Weiner, Leon; Kilpatrick, John E.; and Spiger, Robert J., 3,679,877.

Kimberly-Clark Corporation: *See—*
Capell, A. Earl; and Wilson, Leroy E., 3,679,515.
Nissen, Walter D.; and Hammond, Philip G., 3,679,094.
Nissen, Walter D.; and Hammond, Philip G., 3,679,095.

Kimura, Chikara, to Hitachi, Ltd. Specimen holder transfer mechanism for an electron microscope. 3,679,900, Cl. 250-49.50b.

Kimura, Shuji: *See—*
Daitoku, Kouichi; and Kimura, Shuji, 3,679,148.

King, Alwyn H.: *See—*
Roberts, John A.; and King, Alwyn H., 3,678,564.

King, Bernard George: *See—*
Biazzo, Martin Robert; King, Bernard George; and Ortel, William Charles Gormley, 3,678,574.

King, John Howliston; and Smith,Frank, to Imperial Chemical Industries Limited. Baseplate assembly for mercury-cathode cell. 3,679,570, Cl. 204-297.00r.

King, John O., Jr. Method and apparatus for severing tubing. 3,679,109, Cl. 225-2.000.

Kingsbury, LC James: *See—*
Beny, Janos; Kingsbury, LC James; and Scribner, David L., 3,678,618.

Kinjo, Hisao: *See—*
Wada, Yoshiyo; Kinjo, Hisao; and Okano, Keigo, 3,679,822.

Kinoshita, Kentaro: *See—*
Kishikawa, Kanichi; Kuwata, Takeo; Kinoshita, Kentaro; Tsuchiya, Takao; and Kamogawa, Yoshiro, 3,678,721.

Kinsella, Daniel J., to National Union Electric Corporation. Combination alarm and filter bypass device for a suction cleaner. 3,678,882, Cl. 116-114.0ad.

Kippax, Donald L.; and Murphy, Kevin E., to General Electric Company. Crystallization of 2,6-diphenylphenol. 3,679,766, Cl. 260-620.000.

Kirk, Morris P., & Son, Inc.: *See—*
Larrieu, Leslie J., 3,679,404.

Kirkendall, Thomas D., to Machlett Laboratories, Incorporated, The. High power X-ray tube. 3,679,927, Cl. 313-59.000.

Kirkland, Kenneth C., Jr.; and Hunt, Raymon E., to Stemco Manufacturing Company, Inc. Muffler. 3,679,024, Cl. 181-49.000.

Kirkwood, Loren Robert: *See—*
Avins, Jack; and Kirkwood, Loren Robert, 3,679,816.

Kirschner, Gerald D.: *See—*
Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., 3,680,129.

Kishikawa, Kanichi; Kuwata, Takeo; Kinoshita, Kentaro; Tsuchiya, Takao; and Kamogawa, Yoshiro, to Nippon Steel Corporation. Method of rolling shaped steel members having flanges. 3,678,721, Cl. 72-225.000.

Kitai, Kiyoshi, to Kabushiki Kaisha Hattori Tokeiten. Warning device for an electronically controlled camera shutter. 3,678,821, Cl. 95-10.0ce.

Kitai, Kiyoshi. Exposure time control device for a camera shutter mechanism. 3,678,837, Cl. 95-59.000.

Kittredge, Frank M., to Ford Motor Company. Dual diaphragm distributor. 3,678,806, Cl. 92-48.000.

Kittredge, Raymond Edson, to Singer Company, The, mesne. Inherent rewound film transport system. 3,679,147, Cl. 242-55.180.

Kiyono, Hiroshi; and Sugiyama, Kohei, to Sekisu Kagaku Kogyo Kabushiki Kaisha. Process for the preparation of thermoplastic articles containing liquid matter uniformly. 3,679,788, Cl. 264-211.000.

Klein, Louis A.: *See—*
Newman, Daniel J.; and Klein, Louis A., 3,679,549.

Klein, Walter. Zoom lens objective for stereoscopic vision microscopes. 3,679,286, Cl. 350-184.000.

Klein, William G. Antistatic fabric. 3,678,675, Cl. 57-140.0by.

Kleiner, Norbert: *See—*
Uffelman, Malcolm R.; Williams, Richard E.; and Kleiner, Norbert, 3,679,830.

Klemkowski, Philip J., Jr. Mariner's loom. 3,678,610, Cl. 43-43.120.

Klenk, Ludwig; Strutzel, Hans; and Sobottka, Richard, to Kalle Aktiengesellschaft. Sausage casings of synthetic high-polymer thermoplastic material. 3,679,435, Cl. 99-176.000.

Klipfel, Arthur. Building construction system. 3,678,637, Cl. 52-79.000.

Klitzke, Loren J., to Waldorf, Hoerner, Corporation. Film dispenser. 3,679,146, Cl. 242-55.530.

Kloker, Werner: *See—*
Gossens, Hubert; Kammermeier, Jurgen; and Kloker, Werner, 3,679,539.

Klomp, Cornelis Johannes: *See—*
Van Oosterhout, Gerard Willem; Lemmen, Hendrikus Johannes; and Klomp, Cornelis Johannes, 3,679,476.

Klose, Peter H.: *See—*
Feinleib, Julius; Klose, Peter H.; and Ovshinsky, Stanford R., 3,678,852.

Klug, James R.: *See—*
Bailey, Robert C.; Estes, Harry A.; James, Glen S.; Klug, James R.; Montillon, Henry A.; Myring, Verne E.; Robertson, Orville H.; Sargeant, Blaine W.; and Sorensen, Neal E., 3,679,200.

Kmecak, Ronald A.: *See—*
Kovach, Stephen M.; and Kmecak, Ronald A., 3,679,773.

Kmecak, Ronald A.; Kovach, Stephen M.; and Patrick, Ralph E., to Ashland Oil Inc. Hydroealkylation process with catalyst of group VIB metals promoted by tin oxide or lead oxide. 3,679,768, Cl. 260-672.00r.

Kmecak, Ronald A.; and Kovach, Stephen M., to Ashland Oil, Inc. Alkyl transfer of alkyl aromatics with group VIII metals on zeolites. 3,679,769, Cl. 260-672.00t.

Knaeps, Alfonsus Gillielmus: *See—*
Hermans, Hubert Karel Frans; Knaeps, Alfonsus Gillielmus; and Willems, Joannes Josephus Maria, 3,679,686.

Knell, Martin; and Dexter, Martin, to Ciba-Geigy Corporation. Thiodialkanoamidophenol antioxidants. 3,679,744, Cl. 260-559.00t.

Knight, Donald V., to Ciba-Geigy Corporation. Neck supporting bracket for jug labeling machine. 3,679,523, Cl. 156-447.000.

Knight, Frank W.; and Van Allen, David, to Polaroid Corporation. Simplified diffusion-transfer film products. 3,679,417, Cl. 96-78.000.

Knippel, Willis H.: *See—*
Shaver, William R.; and Knippel, Willis H., 3,679,069.

Knippenberg, Wilhelmus Franciscus; and Verspui, Gerrit, to U.S. Philips Corporation. Method of securing diamond by brazing. 3,678,568, Cl. 29-473.100.

Knogo Corporation: *See—*
Minasy, Arthur J., 3,678,608.

Knowles, Frederick G.; and Taylor, Clarence R., to Eastman Kodak Company. Cassette-type microfilm reader. 3,679,298, Cl. 353-26.000.

Knowles, Richard N.; and Arthur, Wilfred J., to Du Pont de Nemours, E. I., and Company. Certain N-acelylcyclohexy amines. 3,679,805, Cl. 424-320.000.

Kobayashi, Makoto: *See—*
Tanegashima, Kenichiro; Kobayashi, Makoto; and Kudo, Shinichiro, 3,679,864.

Kobayashi, Tsunekazu, to Denki Onkyo Company, Limited. Contactless push button switch. 3,680,025, Cl. 338-32.000.

Kobayashi, Tsuyoshi: *See—*
Yamamoto, Hisao; Okamoto, Tadashi; and Kobayashi, Tsuyoshi, 3,679,672.

Kobe Steel, Ltd.: *See—*
Arikawa, Masayasu; Godai, Tomokazu; Arai, Toshio; Hironosuke, Kada; and Akihiko, Iochi, 3,679,866.

Koda, Kiyoyasu: *See—*
Kudo, Tetsuo; Nakatani, Kozo; and Koda, Kiyoyasu, 3,679,387.

Koenen, Wilhelm Engelinus: *See—*
Bentholm, Svend Asger Rud; and Koenen, Wilhelm Engelinus, 3,679,794.

Koenig, Karl-Heinz; Maschke, Artur; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Diamino-s-triazines. 3,679,678, Cl. 260-249.800.

Koepke, Donald H.: *See—*
Steidinger, Donald J.; and Koepke, Donald H., 3,678,851.

Kohjin Company, Limited: *See—*
Matsugu, Tomoyuki; Notomi, Ryota; and Kanoh, Teruchika, 3,678,546.

Kohler, Roland; Frick, Hans-Dieter; Fengler, Harald; and Geyken, Erwin, to Agfa-Gevaert Aktiengesellschaft. Apparatus for developing strips of photographic film. 3,678,843, Cl. 95-94.00r.

Kohlmuller, Hans; and Kuhl, Dieter, to Siemens Aktiengesellschaft. Fuel cell battery for reacting gaseous reactants in fuel cells operated with liquid electrolyte. 3,679,485, Cl. 136-86.00r.

Kohn, Gustave: *See—*
Brown, Melancthon Starr, 3,679,733.

Kohn, Gustave K., to Chevron Research Company. Phenyl N-methyl carbamates. 3,679,734, Cl. 260-479.00c.

Kolesa, Claudine Marie. Process and Clutch for cultivating and harvesting shellfish. 3,678,900, Cl. 119-4.000.

Kolodney, Morris, to United States of America, Atomic Energy Commission, mesne. Method and apparatus for determining the carbon activity of fluids. 3,679,551, Cl. 204-1.00t.

Komatsu, Akira: *See—*
Seikguchi, Masaaki; Yoshikawa, Kaoru; and Komatsu, Akira, 3,679,133.

Komori, Toshimi: *See—*
Shiari, Yoshimichi; and Komori, Toshimi, 3,680,017.

Kondou, Kenzi: *See—*
Imanishi, Masakazu; Kondou, Kenzi; and Sugiura, Ituo, 3,678,975.

Konstant, Anthony N., to Speedrack Inc. Storage rack and bracket therefor. 3,679,067, Cl. 211-182.000.

Kopczewski, Robert F.: *See—*
Burgess, James F.; Kopczewski, Robert F.; and Holeman, John M., 3,679,299.

Kopf, Joseph Ellis: *See—*
Nellis, Stewart; Kopf, Joseph Ellis; and Reti, Adrian R., 3,680,037.

Koppers Company, Inc.: *See—*
Greco, Nicholas P., 3,679,753.
Powell, Russell A., 3,679,192.

Korlow Corporation: *See—*
Orlowski, Gerald J., 3,678,976.

Korsgen, Hans Helmuth; and Weller, Wolfgang, to Coathylene S.A. Preparing finely divided copolyamides by precipitation from alcohol-water solution. 3,679,638, Cl. 260-78.00s.

Korwin, Irving. Adjustable frame for ornament. 3,678,705, Cl. 63-18.000.

Kotler, Richard G.: *See—*
Feuer, Michael M.; and Kotler, Richard G., 3,679,150.

Koulovatos, James; and Thomas, Kenneth L., to Pollution Control Products, Inc. Batch sewage treatment system. 3,679,053, Cl. 210-86.000.

Kovach, Stephen M.: *See—*
Kmecak, Ronald A.; Kovach, Stephen M.; and Patrick, Ralph E., 3,679,768.
Kmecak, Ronald A.; and Kovach, Stephen M., 3,679,769.

Kovach, Stephen M.; and Kmecak, Ronald A., to Ashland Oil, Inc. Dehydrogenation-type reactions with Group VIII catalysts. 3,679,773, Cl. 260-683.3.

Kovacs, William L., to Procter & Gamble Company, The. Separation of phosphorous acid from mixtures of phosphorous acid and phosphoric acid by crystallization. 3,679,374, Cl. 23-297.000.

Kozacka, Frederick J., to Chase-Shawmut Company, The. High-voltage fuse having a plurality of fuse links wound helically around an insulating mandrel. 3,680,019, Cl. 337-161.000.

Krause, Frederick A., Associates, Inc.: *See—*
Hoffman, Bernard L., 3,678,726.

Kreider, Eunice M.; and Tweit, Robert C., to Searle, G. D., & Co. 1-(β-Halophenethyl)imidazoles and congeners. 3,679,697, Cl. 260-309.000.

Krekeler, Claude B., to Cincinnati Mine Machinery Company, The. Chain for mining machines and the like. 3,679,265, Cl. 299-84.000.

Krepps, James Edgar, Jr.; Chamberlain, Meredith K.; and Fisher, Robert D., to Sarkes Tarzian, Inc. AM, FM, and FM stereo tuner having simplified AM to FM switching means. 3,679,979, Cl. 325-315.000.

Kretschmar, Herbert C.; and Erman, William F., to Procter & Gamble Company, The. Process for preparing β-santalol from 3-methylnorcamphor. 3,679,756, Cl. 260-631.500.

Kretzschmar, Heinz; Chlebus, Rold; and Ochsner, Willi, to Organisation Ralfs KG. Collapsible container for use in conveyor systems. 3,679,040, Cl. 198-1.000.

Kriger, Ronald J., to International Business Machines Corporation. Polarity hold latch with common data input-output terminal. 3,679,915, Cl. 307-289.000.

Krolzick, Gordon J., to Whirlpool Corporation. Agitator with reciprocating device. 3,678,714, Cl. 68-131.000.

Kropfl, Walter Joseph, to Bell Telephone Laboratories, Incorporated. Use equalization on closed loop message block transmission systems. 3,680,056, Cl. 340-172.500.

Krupp, Robert F.; and Miller, Stanley J., to National Can Corporation. Vented curl for aerosol dome. 3,679,091, Cl. 220-67.000.

Kryman, Frederick J., to Eastman Kodak Company. Heterogeneous photoconductor composition formed by low-temperature conditioning. 3,679,406, Cl. 96-1.600.

Kryman, Frederick J.; and Staudenmayer, William J., to Eastman Kodak Company. Heterogeneous photoconductor composition formed by two-stage dilution technique. 3,679,408, Cl. 96-1.600.

Krzyzanowski, Erich, to Grunzweig & Hartmann Aktiengesellschaft. Apparatus for making castings. 3,678,989, Cl. 164-246.000.

Kubo, Kazuhiko, to Kabushiki Kaisha Osaka Packing Seizosho. Molding materials of calcium silicate hydrate and shaped products thereof. 3,679,446, Cl. 106-120.000.

Kubo, Kazunori. Continuous slurry dryer. 3,678,596, Cl. 34-68.000.

Kubo, Nobuzo; and Ito, Takeshi, to Dainippon Screen Manufacturing Company, Limited. Method for forming perforations in metal sheets by etching. 3,679,500, Cl. 156-11.000.

Kubo, Seitoku: *See—*
Ito, Shin; and Kubo, Seitoku, 3,678,787.

Kudamatsu, Akio; Miyamoto, Masao; and Fukazawa, Nobuo, to Farbenfabriken Bayer Aktiengesellschaft. Substituted benzyl-thiolcarbamic acid esters. 3,679,726, Cl. 260-455.00a.

Kudevitsky, Yankel Veniaminovich: *See—*
Ezhov, Leonid Antipovich; Kudevitsky, Yankel Veniaminovich; and Belyaeva, Ljudmila Pavlovna, 3,678,554.

Kudo, Shinichiro: *See—*
Tanegashima, Kenichiro; Kobayashi, Makoto; and Kudo, Shinichiro, 3,679,864.

Kudo, Tetsuo; Nakatani, Kozo; and Koda, Kiyoyasu, to Minolta Camera Kabushiki Kaisha. Method and apparatus for manufacturing tubular optical glass. 3,679,387, Cl. 65-105.000.

Kuehl, Guenther L., to Guenther Systems, Inc. Transport device. 3,679,074, Cl. 214-83.260.

Kuhl, Dieter: *See—*
Kohlmuller, Hans; and Kuhl, Dieter, 3,679,485.

Kuhn, Richard B., to North American Aviation, Inc. Apparatus and information processing methods for a tracking system tracker unit. 3,679,825, Cl. 178-6.800.

Kuhni, Rudolf: *See—*
Schmid, Adolf; and Kuhni, Rudolf, 3,678,740.

Kuhnis, Hans Herbert; and Rolf, Denss, to Ciba-Geigy Corporation. Piperdine derivatives in an antitussive composition and method. 3,679,799, Cl. 424-267.000.

Kuhns, Roger J., to Avant Incorporated. Process for improving the production of laminated plastic ID card. 3,679,514, Cl. 156-309.000.

Kulikov, Ivan Vladimirovich; Borisov, Vasily Semenovich; and Treschev, Viktor Georgievich; deceased (by Trescheva, Zinaida Mikhailovna; Trescheva, Vera Viktorovna; and Treschev, Dmitry Viktorovich; administrators). Filter for water-taking wells. 3,678,999, Cl. 166-236.000.

Kummerman, Henri, to MacGregor Comarain S.A. Device for closing a hatch or the like. 3,678,985, Cl. 160-188.000.

Kummermehr, Hans: *See—*
Mechel, Fridolin; and Kummermehr, Hans, 3,679,443.

Kuntz, Urban E.: *See—*
Basche, Malcolm; Fanti, Roy; Galasso, Francis S.; Kuntz, Urban E.; and Schile, Richard D., 3,679,475.

Kunz, Gerhard K., to GHH-M.A.N. Technik Gesellschaft fur Anlagenbau m.b.H. Method and apparatus for softening or desalting water by ion exchange. 3,679,581, Cl. 210-33.000.

Kunze, Wolfgang: *See—*
von der Eltz, Hans-Ulrich; Birke, Walter; Kunze, Wolfgang; Taunus, Hofheim; and Schon, Franz, 3,679,349.

Kuraray Co., Ltd.: *See—*
Matsubayashi, Kanji; and Segawa, Hiroyuki, 3,679,633.

Kurashiki Rayon Co., Ltd.: *See—*
Ashikaga, Tadao; and Higashimori, Shosuke, 3,679,544.

Kurita, Hirohisa: *See—*
Miyasaka, Mamoru; Kurita, Hirohisa; and Furihata, Hideo, 3,678,682.

Kuroyanagi, Masashi: *See—*
Masuda, Noboru; and Kuroyanagi, Masashi, 3,680,026.

Kurtin, Stephen: *See—*
Mead, Carver A.; and Kurtin, Stephen, 3,678,751.

Kushihashi, Akira; and Ikeda, Koji, to Nippon Sheet Glass Co., Ltd. Process and apparatus for forming a metal oxide coating on flat glass. 3,679,386, Cl. 65-60.000.

Kushner, Jack, to Delta Scientific Corporation. Metering pump and valve. 3,679,331, Cl. 417-477.000.

Kuwata, Takeo: *See—*
Kishikawa, Kanichi; Kuwata, Takeo; Kinoshita, Kentaro; Tsuchiya, Takao; and Kamogawa, Yoshiro, 3,678,721.

Kydd, Paul H., to General Electric Company. Elastomeric mold lining for making wax replica of complex part to be cast. 3,678,987, Cl. 164-45.000.

Kyorin Seiyaku Kabushiki Kaisha: *See—*
Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; Ushiyama, Keiichi; Shinoda, Hirotaka; and Hasegawa, Yoshinori, 3,679,730.

Kyowa Denki Kagaku Kaisha: *See—*
Hirota, Kashichi, 3,678,868.

La Hue, Richard W.; and Smith, Nolan A., to Catalysts and Chemicals Inc. Selective hydrogenation of acetylenes. 3,679,762, Cl. 260-677.00h.

La Salle Steel Company: *See—*
Nachtman, Elliot Simon, 3,679,400.

La Valle, Thomas Alvin, to Western Electric Company, Incorporated. Methods of assembling and testing electrical components. 3,679,861, Cl. 219-117.000.

La Vant, Laurence L. Multi-projector image composing head. 3,679,303, Cl. 355-40.000.

Labana, Santokh S.: *See—*
Aronoff, Elihu; and Labana, Santokh S., 3,679,447.

LaCombe, Donald J.; and Babcock, Guy L., to General Electric Company. Composite integrated circuits including semiconductor chips mounted on a common substrate with connections made through a dielectric encapsulator. 3,679,941, Cl. 317-101.00a.

Laedlein, Denis Jacques: *See—*
Dorier, Bernard Louis Marcel; and Laedlein, Denis Jacques, 3,680,113.

Laing, John, and Son Limited: *See—*
Howe, Alan Colin Scott, 3,679,445.

Lake, Connie, to Mobil Oil Corporation. Bag structures with integral closure arrangement. 3,679,126, Cl. 229-62.000.

Lambert, Bernard, to Ethylene Plastique. Photodegradable polyolefins. 3,679,777, Cl. 260-897.00a.

Lambert, Jacques, to Flaminaire Marcel Quercia. Fuel reservoirs, especially for gas-lighters. 3,678,695, Cl. 62-50.000.

Lambert, Jacques, to Societe Flaminaire Marcel Quercia. Lighters, especially gas lighters. 3,679,346, Cl. 431-130.000.

Landgraf, Walter D. Ribbon spool. 3,679,039, Cl. 197-175.000.

Landis & Gyr AG: *See—*
Mustert, Rudolf, 3,679,314.

Landis & Zug AG: *See—*
Siebers, Holger, 3,679,916.

Lane, Richard L.: *See—*
Bender, David L.; and Lane, Richard L., 3,678,917.

Langewis, Cornelis, to Kaiser Aluminum & Chemical Corporation. Container forming apparatus. 3,678,725, Cl. 72-344.000.

Largeron, Louis; and Raquin, Roger, to Societe Lorraine de Preparation Textile. Leasing apparatus and method. 3,678,548, Cl. 28-40.000.

Larrieu, Leslie J., to Kirk, Morris P., & Son, Inc. Zinc base casting alloy. 3,679,404, Cl. 75-178.0am.

Larson, Charles R.; and Dudley, Robert H., to Prab Conveyors, Inc. Metal and plastic chip wringing apparatus and process. 3,679,051, Cl. 210-73.000.

Larson, Ivar G. Ball-point pen safety lock. 3,679,317, Cl. 401-109.000.

Latour, Andre; and Fumagalli, Giacomo, to Magrini Fabriche Riunite Magrini Scarpa e Magnano M.S.M.-S.p.A. Autoextinguishing interrupters. 3,679,851, Cl. 200-148.00a.

Latus, Gerald J., Jr.: *See—*
Addington, Robert L.; and Latus, Gerald J., Jr., 3,680,006.

Lauck, Peter, III, 40% to Myers, Robert H. Self compensating control circuit. 3,679,872, Cl. 219-501.000.

Laucks, Howard H.: *See—*
Hague, Robert Z.; Laucks, Howard H.; and Mastropole, Alfred J., 3,678,801.

Laucournet, Robert; and Turpin, Pierre, to Hoffmann-La Roche Inc. Apparatus for measuring the light passing through a liquid sample in a closed flexible walled chamber. 3,679,315, Cl. 356-180.000.

Laurent, Serge: *See—*
Bargain, Michel; Gruffaz, Max; Laurent, Serge; and Mallet, Maurice, 3,679,639.

Lavigne, Pierre: *See—*
Cohen, Michel; Lavigne, Pierre; and Sauvagnac, Robert, 3,678,920.

Lawler, Craig M.: *See—*
Scarnato, Thomas J.; Dryan, James J.; Lawler, Craig M.; and Sorensen, Robert, 3,678,671.

Lawrance, Derek Robert: *See—*
Edgar, Owen Burchell; Hughes, William; Lawrance, Derek Robert; Lederer, Gerald; and Ritchie, Colin Foster, 3,679,624.

Lawrence, Charles R., to Murphy, Frank W., Manufactures, Inc. Pressure indicating and limiting strument. 3,678,758, Cl. 73-411.000.

Le Duc, Donald: *See—*
Guyaux, James R.; Le Duc, Donald; and McDonald, Dean T., 3,679,075.

Le Grand, Donald G., to General Electric Company. Crystallized organopolysiloxane-polycarbonate block polymers and method for making them. 3,679,774, Cl. 260-824.00r.

Leach, John M. Overhead accumulation conveyors. 3,678,862, Cl. 104-172.00s.

Leach, Sam L ., to Pid Corporation. Compressed parallax photography. 3,678,833, Cl. 95-18.000.

Lean, Eric G.: *See—*
Fang, Frank F.; and Lean, Eric G., 3,679,985.

Lear Siegler, Inc.: *See—*
Hedrick, Geoffrey S., 3,679,954.
Litkewycz, Stanley, 3,678,518.

Lebocey Industries: *See—*
Palencher, Jacques, 3,679,803.

Leder, Lewis B.: *See—*
Adams, James E.; Leder, Lewis B.; and Haas, Werner E. L., 3,679,290.

Lederer, Gerald: *See—*
Edgar, Owen Burchell; Hughes, William; Lawrance, Derek Robert; Lederer, Gerald; and Ritchie, Colin Foster, 3,679,624.

Lee, Admond K.; and Wong, Kwok-Ming, to Eastern Time Limited. Alarm clocks and watches. 3,678,679, Cl. 58-21.150.

Lee, Hanju; and Chi, Dongsuk, to Grace, W. R., & Co. Ultra-stable 3A molecular sieve. 3,679,604, Cl. 252-455.00f.

Leffeld, Nathan A. Compact rotatable display device. 3,679,066, Cl. 211-163.000.

Lefkowitz, Harold, to Delta Strapping Industries, Inc. Buckle closure for plastic strapping. 3,678,541, Cl. 24-74.000.

Lehikoinen, Urho A., to Ethyl Corporation. Chemiluminescent smokes. 3,679,594, Cl. 252-188.300.

Lehovec, Kurt. Vented clothes cabinet. 3,679,281, Cl. 312-31.000.

Leibinger, Berthold, to Trumpf & Co. Method and device for exchanging tools on machines having reciprocating movement. 3,678,562, Cl. 29-400.000.

Leibinsohn, Saul. Stop cock. 3,678,960, Cl. 137-625.470.

Leich, Robert A., to Camdex, Inc. Ammunition reloader. 3,678,799, Cl. 86-26.000.

Leirvik, Raymond M., to Babcock & Wilcox Company, The. Nuclear fuel rod. 3,679,545, Cl. 176-68.000.

Leitner, Robert T.; and Drake, John E., to Jerrold Electronics Corporation. Antenna system with ferrite radiation suppressors mounted on feed line. 3,680,146, Cl. 343-792.000.

Leliaert, Raymond M., to Wheelabrator-Frye Inc. Centrifugal blasting wheel and blade therefor. 3,678,629, Cl. 51-9.000.

Lemieux, George E., to Ford Motor Company. Automotive transmission mechanism having four forward driving speed ratios. 3,678,784, Cl. 74-759.000.

Lemmen, Hendrikus Johannes: *See—*
Van Oosterhout, Gerard Willem; Lemmen, Hendrikus Johannes; and Klomp, Cornelis Johannes, 3,679,476.

Leningradsky Metallichesky Zavod Imeni XXII Siezda KPSS: *See—*
Ezhov, Leonid Antipovich; Kudevitsky, Yankel Veniaminovich; and Belyaeva, Ljudmila Pavlovna, 3,678,554.

Lennon, Andrew Gordon, to Crane Canada Limited. Piston pump actuating mechanism. 3,678,767, Cl. 74-50.000.

Leonard, Edward H. Balance. 3,679,014, Cl. 177-216.000.

Lesiecki, Gerald, to Allis-Chalmers Manufacturing Company. Automatic shutdown seal. 3,679,217, Cl. 277-3.000.

Lester, George R.; and Brennan, John F., to Universal Oil Products Company. Preparation of dibenzodioxins. 3,679,704, Cl. 260-340.300.

Leuschner, Gerhard; Pietsch, Peter; and Kadner, Gunter, to Veb Kombinat Nagema. Apparatus for the production of a vacuum package. 3,678,648, Cl. 53-112.00a.

Leutert, Friedrich, Firma: *See—*
Lodynski, Emil, 3,679,178.

Lever Brothers Company: *See—*
Brown, Frederick G., 3,679,347.
Fielibert, Josef Frans, 3,679,509.

Levine, Beth, to Levine, Herbert, Inc. Shoe and fastening therefor. 3,678,604, Cl. 36-11.500.

Levine, Charles A.: *See—*
Brown, William E.; Heitz, Robert G.; and Levine, Charles A., 3,679,480.

Levine, Herbert, Inc.: *See—*
Levine, Beth, 3,678,604.

Levine, Seymour D., to Squibb, E. R., & Sons, Inc. Acenaphthene derivatives. 3,679,747, Cl. 260-566.0ae.

Lewis, William T.: *See—*
Addinall, Ramon L.; Lewis, William T.; and Mudroch, Otokar, 3,679,513.

Libbey-Owens-Ford Company: *See—*
Miller, Alfred H.; and Dean, George A., 3,679,076.

Liberman, Zvie. Intercommunication system. 3,679,837, Cl. 179-37.000.

Liberti, Lorenzo: *See—*
Boari, Gianfranco; Liberti, Lorenzo; Merli, Carlo; and Passino, Roberto, 3,679,580.

Liebherr, Harold R.: *See—*
Cornish, Edward; and Liebherr, Harold R., 3,678,703.

Lieser, Zeev. Intrusion systems employing digital processing circuitry. 3,680,074, Cl. 340-258.00a.

Liggett & Meyers Incorporated: *See—*
Key, Robert L., III; and Christy, Melvin G., 3,678,939.

Light reflection preventive device: *See—*
Kennedy, Peter J.; and Ford Motor Company, 3,679,887.

Liguori, Thomas A., to Modern Mold & Tool Corporation. Propel and repel ball point pen mechanism. 3,679,318, Cl. 401-110.000.

Lilly, Rodger H.: *See—*
Ellis, Colin R. G.; and Lilly, Rodger H., 3,678,566.

Limberg, Allen Le Roy, to RCA Corporation. Synchronous demodulator employing common base transistor amplifier input and base-emitter clamping action. 3,679,981, Cl. 329-50.000.

Limberg, Allen Le Roy, to RCA Corporation. Synchronous demodulator employing transistor base-emitter clamping action. 3,679,982, Cl. 329-50.000.

Lincoln, Lewis L.; and Heseltine, Donald W., to Eastman Kodak Company. Rigidized carbocyanine dyes and photographic emulsions. 3,679,427, Cl. 96-120.000.

Lincoln Rochester Trust Company: *See—*
Eagle, John H., deceased, 3,678,827.

Linde Aktiengesellschaft: *See—*
Heyl, Walter, 3,678,804.

Lingnau, Josef: *See—*
Hohn, Gerhard; Lingnau, Josef; and Rettemeier, Wulf, 3,679,131.

Linton, Denton C.; Zinkl, Andrew; and Ballam, Jack, to Micro Copper Corporation. Continuous process to precipitate high purity copper powder from acid leaching liquors containing copper in solution. 3,679,399, Cl. 75-109.000.

Linton, Robert W.: *See—*
Sams, Robert H.; Linton, Robert W.; and Horikawa, Noboru R., 3,679,610.

Linz, Georg; and Sommer, Lothar, to Linz, Georg, Firma. Method of making a ball point pen or a refill therefor. 3,678,565, Cl. 29-441.000.

Linz, Georg, Firma: *See—*
Linz, Georg; and Sommer, Lothar, 3,678,565.

Lion Precision Corporation: *See—*
Michelson, Louis, 3,679,972.

Lipka, David H.: *See—*
Schiffmann, Robert F.; Roth, Howard; Lipka, David H.; and Goodman, Abraham H., 3,679,432.

Liposky, Richard B. Hand operable selector valve. 3,678,959, Cl. 137-625.110.

Lippel, Lewis, Jr.: *See—*
Gustafson, Walter R.; McMillen, William H.; and Lippel, Lewis, Jr., 3,680,087.

Litchfield, John H.; and Vely, Victor G., to Wrigley, Wm., Jr., Company. Dialdehyde-containing anti-caries chewing gum compositions. 3,679,792, Cl. 424-48.000.

Litkewycz, Stanley, to Lear, Siegler Inc. Bunk bed assembly. 3,678,518, Cl. 5-9.000.

Little, Carl H., to Weber-Knapp Company. Hinge latch. 3,678,536, Cl. 16-144.000.

Litton Business Systems, Inc.: *See—*
Greenwood, David L., 3,679,878.

Litton Systems, Inc.: *See—*
Erdley, Harold F.; and Wyse, Stanley F., 3,678,764.
Holm, Robert Leander; and Ashford, John Wesley, 3,679,929.

Livingston, Jimmy Y., to Catalysts and Chemicals Inc. Purification of process gas streams by hydrogenation. 3,679,763, Cl. 260-677.00h.

Livshitz, Stanley L.; Engelhardt, Alvin; and Adler, Stanford L., to Technicon Instruments Corporation. Blood sample tray apparatus. 3,679,129, Cl. 233-26.000.

Lloyd, Allen H.; and Beckman, William J., to Tech-Art, Inc. Machine for brushing and stacking carton blanks. 3,678,525, Cl. 15-77.000.

Lloyd, Peter Anthony: *See—*
Cotton, John Michael; and Lloyd, Peter Anthony, 3,680,053.

Lloyds Bank Limited: *See—*
Woodham, Cecil Halliday, 3,679,184.

Llucia, Antonio Vilas. Hydrometer. 3,678,755, Cl. 73-454.000.

Lobdell-Emery Manufacturing Co.: *See—*
Smith, George J., 3,679,163.

Lobeck, Walter G.: *See—*

Wu, Yao Hua; and Lobeck, Walter G., 3,679,692.
Loch, Alphonse: *See—*
Loch, George N.; and Loch, Alphonse, 3,679,046.
Loch, George N.; and Loch, Alphonse, Grain auger device. 3,679,046, Cl. 198-213.000.
Lockheed Aircraft Corporation: *See—*
Ebin, Joseph A., 3,678,956.
Lodynski, Emil, to Leutert, Friedrich, Firma. Apparatus for setting of rods for deep well installations. 3,679,178, Cl. 254-93.00r.
Loft, John T.: *See—*
Druin, Melvin L.; Loft, John T.; and Plovan, Steven G., 3,679,538.
Logothetis, Anestis L.: *See—*
Harrell, Jerald R.; Logothetis, Anestis L.; and Verbanc, John J., 3,679,627.
Logue, Vernon J.: *See—*
Bryant, Kenneth Owen; Morrow, William R.; and Logue, Vernon J., 3,680,088.
Lohe, Konrad; Mohr, Reinhard; Mundlos, Eberhard; and Freb, Hermann, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the dyeing or printing of textile materials made from polymers or copolymers of acrylonitrile. 3,679,358, Cl. 8-177.0ab.
Lohr, James E., to Du Pont de Nemours, E. I., and Company. Electrodeposition of fluorocarbon polymers. 3,679,618, Cl. 260-21.000.
London, Arnold B., mesne: *See—*
Cravits, Phillip, 3,678,533.
Long Island Oyster Farms, Inc.: *See—*
Mulhall, James Edward, 3,679,478.
Long Mfg. N. C. Inc.: *See—*
Long, William R., 3,678,667.
Long, William R., to Long Mfg. N. C. Inc. Loose peanut recovery apparatus. 3,678,667, Cl. 56-130.000.
Loop, Wendell Harold, to McCulloch Corporation. Method and apparatus for heating carburetor air and flushing an air filter in a chain saw. 3,678,973, Cl. 143-32.00r.
Loopco: *See—*
Singleton, Richard L., 3,678,712.
Lord Corporation: *See—*
Schmidt, Warren E., 3,679,197.
L'Oreal: *See—*
Charle, Roger; Kalopissis, Gregoire; and Zviak, Charles, 3,679,102.
Lorenz, Roman R.: *See—*
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Louapre, Merlin E.: *See—*
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Loupere, Andre: *See—*
Costa, Charles; Loupere, Andre; Monsel,Philippe; and Schmitt, Bertrand, 3,679,272.
Lovitz, David D., to Sternco Industries, Inc. Shrimp hatchery. 3,678,899, Cl. 119-2.000.
Lowder, Dale E.: *See—*
Nise, Wilfred C.; and Lowder, Dale E., 3,678,524.
Lowenfeld, Rudolf; and Kaiser, Hans, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the dyeing of textile materials made from mixtures of polyester and cellulosic fibres. 3,679,350, Cl. 8-21.00c.
Loy, Henry Albert. Silt dredging apparatus drag scraper for dredging silt. 3,679,004, Cl. 172-26.500.
LTV Electrosystems, Inc.: *See—*
Holmes, Lloyd H.; and Sundland, William D., 3,678,810.
Redmond, William G., 3,679,956.
Redmond, William G., Jr., 3,679,156.
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Kaufman, Paul Richard, 3,679,000.
Lucas, Hilda Katie: *See—*
Lucas, Sydney, 3,679,278.
Lucas, Sydney; deceased (by Lucas, Hilda Katie; administrator). Oil seal arrangements for rotary shafts. 3,679,278, Cl. 308-187.100.
Ludwig, Arthur C.: *See—*
United States of America, National Aeronautics and space Administration, 3,680,144.
Ludwig, Frederic G., 1/3 each to Nolte, Albert C., Jr. and Borden, Gavin Gale. Method and means for reproducing printed material. 3,679,302, Cl. 355-17.000.
Luft, Robert G., to International Harvester Company. Dual station transmission control. 3,679,018, Cl. 180-77.00s.
Lunn, John David. Television camera registration. 3,679,815, Cl. 178-5.40m.
Lutz, Roger J., to Gerber Products Company. Apparatus for forming filled food products. 3,679,338, Cl. 107-14.00r.
Luwa AG: *See—*
Widmer, Fritz; and Gorbei, Janos Miklos, 3,678,983.
Lyman, John B.: *See—*
Turner, Phillip H.; and Lyman, John B., 3,678,702.
M & T Chemicals Inc.: *See—*
Chessin, Hyman, 3,679,381.
Maas, Willem: *See—*
de Lange, Willem; Duyfjes, Werner; and Maas, Willem, 3,679,797.
Mac Nab, Robert Beattie; and Mulhall, Brian Edward, to International Research & Development Company. Superconducting dynamo-electric machines. 3,679,920, Cl. 310-10.000.
Macedo, Alfonso O. Reminder clock. 3,678,678, Cl. 58-16.500.
MacGregor Comarain S.A.: *See—*
Kummerman, Henri, 3,678,985.
Machlett Laboratories, Incorporated, The: *See—*
Kirkendall, Thomas D., 3,679,927.
Macone, Frederick W., to Avant Corporation. Laminated card envelope. 3,679,512, Cl. 156-272.000.
Madden, Ernest Francis, to Drucker, William A. Profile transferring device. 3,678,587, Cl. 33-175.
Madden, William F.: *See—*
Forance, Ronald B.; Madden, William F.; and Gaucher, Clair H., 3,679,125.
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Maeder, Arthur: *See—*
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Nachbur, Hermann; and Maeder, Arthur, 3,679,778.
Maeder, Erwin; and Siegrist, Adolf Emil, to Ciba-Geigy AG. Phenyl-1,3,4-oxdiazole compounds. 3,679,669, Cl. 260-240.00d.
Maes, Roland. Interferon or viral inhibitor protein induction. 3,679,654, Cl. 260-112.500.
Maev, Veniamin Evnovich: *See—*
Rubinshtein, Sholom Yakovlevich; Babin, Mikhail Artemievich; Gutman, Anatoly Lvovich; Naumenko, Viktor Dmitrievich; Orlov, Evgeny Mikhailovich; Presman, Vladimir Alexandrovich; Maev, Veniamin Evnovich; and Bondarenko, Fedor Alexeevich, 3,678,664.
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Magnetic Head Corporation: *See—*
Braun, Richard E.; Hopkins, Lionel G.; Sheehan, Neil J.; and Sanchez, Edward J., 3,678,576.
Magnus, Agatha C. Glucosamine- alkylsulfonate and process. 3,679,660, Cl. 260-211.00r.
Magnuson, Raymond A.: *See—*
Brorson, Donald L.; and Magnuson, Raymond A., 3,679,100.
Magri, Joseph L.: *See—*
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Shohet, Herbert N.; and Magri, Joseph L., 3,678,691.
Magrini Fabriche Riunite Magrini Scarpa e Magnano M.S.M.-S.p.A.: *See—*
Latour, Andre; and Fumagalli, Giacomo, 3,679,851.
Maier, Elmar; and Rangger, Herbert, to Hilti Aktiengesellschaft. Powder charge-operated bolt setter for securing exothermic plates on chill molds. 3,679,118, Cl. 227-10.000.
Maierform Holding S.A.: *See—*
Csupor, Denis D. A., 3,678,877.
Mailloux, Robert J.: *See—*
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Make, Siegfried: *See—*
Rambacher, Paul; and Make, Siegfried, 3,679,694.
Maki, Kenji: *See—*
Yamaguchi, Hiroyuki; Tuji, Katsuyoshi; Maki, Kenji; and Shimonishi, Isoo, 3,679,355.
Makino, Katsuo; and Sawato, Iwao, to Fuji Photo Film Co., Ltd. Electrophotographic element having a series of alternate photoconductive and insulating layers. 3,679,405, Cl. 96-1.500.
Malatestinic, Nicholas; and Ziering, Albert, to Hoffmann-La Roche, Inc. 4-[4-Hydroxypiperidino]-4'-fluorobutyrophenones. 3,679,666, Cl. 260-293.800.
Malburet, Rene A., to Compagnie de Saint-Gobain. Apparatus for handling fragile sheets. 3,679,073, Cl. 214-1.00q.
Maldonado, W. E., mesne: *See—*
Farque, C. Anthony, 3,679,957.
Malett, N. William, to Ford Motor Company. Control valve for positive crankcase ventilation system. 3,678,910, Cl. 123-119.00b.
Mallet, Maurice: *See—*
Bargain, Michel; Gruffaz, Max; Laurent, Serge; and Mallet, Maurice, 3,679,639.
Mallory, P. R., & Co., Inc.: *See—*
Dey, Arabinda N.; and Holmes, Robert W., 3,679,484.
Malmberg, Paul R.: *See—*
Handy, Robert M.; Angello, Stephen J.; Malmberg, Paul R.; and O'Keeffe, Terence W., 3,679,497.
Malutich, William J., to Continental Rubber Works. Flashless compression mold. 3,679,345, Cl. 425-406.000.
Manilla, Charles E.; Honaker, Harold H.; and Gothard, David O., to International Nickel Company, Inc., The. Production of clad metal articles. 3,678,567, Cl. 29-420.500.
Mannesmann-Meer Aktiengesellschaft: *See—*
Grober, Kurt, 3,679,856.
Mansberg, Hyman P., to Technicon Instruments Corporation. Method and apparatus for measuring bioluminescence or chemiluminescence for quantitative analysis of samples. 3,679,312, Cl. 356-36.000.
Mansour, Momtaz Nosshi, to Unitek Corporation. Reciprocating drive apparatus. 3,678,768, Cl. 74-54.000.
Manufacture des Machines du Haut-Rhin Corporation: *See—*
Patrignani, Theo, 3,678,774.

Marchant, Paul A., to Ethyl Development Corporation. Spray dispensing container. 3,679,137, Cl. 239-327.000.
Marchesi, Carlo M. Clay area heater. 3,678,919, Cl. 126-92.00r.
Marconi Company Limited, The: *See—*
Nolan, Sean Olic, 3,680,148.
Maresca, Neal J.; and Winton, Orrin J., to Avco Corporation. Field test unit for a gas turbine fuel injection system. 3,678,743, Cl. 73-119.00a.
Mark-Tex Corporation: *See—*
Andrews, Francis W.; Sussman, Philip S.; and Barlow, Sidney D., 3,678,521.
Markewitz, Wolfgang; and Bolduan, Dieter, to Hunnebeck GmbH. Tunnel formwork. 3,678,693, Cl. 61-45.00c.
Marks, Alvin M.; Marks, Mortimer M.; and Kent, Arthur P., to Marks Polarized Corporation. Nonglare coating for surfaces of TV tubes and the like and such coated surfaces. 3,679,451, Cl. 117-33.300.
Marks, Mortimer M.: *See—*
Marks, Alvin M.; Marks, Mortimer M.; and Kent, Arthur P., 3,679,451.
Marks Polarized Corporation: *See—*
Marks, Alvin M.; Marks, Mortimer M.; and Kent, Arthur P., 3,679,451.
Marlowe, Mickey O.: *See—*
Hill, Howard W.; Kaznoff, Alexis I.; and Marlowe, Mickey O., 3,679,596.
Marsden, Ronald Eric. Splicer for reinforcing bars. 3,679,250, Cl. 287-110.000.
Marshall, Edward M. Food cooking grill. 3,678,844, Cl. 99-340.000.
Martenson, Earl D.; and Gebhardt, James J., Jr., to Barber-Greene Company. Material control system for a finishing machine. 3,678,817, Cl. 94-46.000.
Martin, William S.: *See—*
Almasi, Joseph C.; and Martin, William S., 3,679,996.
Martini-Buchbindereimaschinenfabrik AG: *See—*
Schmid, Adolf; and Kuhni, Rudolf, 3,678,740.
Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Method of producing a coated glass fiber strand. 3,679,507, Cl. 156-148.000.
Masa, Hamada: *See—*
Hamao, Umezawa; Shinichi, Kondo; Kenji, Maeda; Tomio, Takeuchi; and Masa, Hamada, 3,679,742.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Stoll, Albert; and Wanka, Walter, 3,679,862.
Maschinenfabrik Meyer & Burger A.G.: *See—*
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Maschinenfabrik Stromag G.m.b.H.: *See—*
Ernst, Lothar; and Ruggen, Werner, 3,678,708.
Maschke, Artur: *See—*
Koenig, Karl-Heinz; Maschke, Artur; and Fischer, Adolf, 3,679,678.
Mashimo, Yukio; and Ishikawa, Mitsuo, to Canon Kabushiki Kaisha. Exposure control device for a camera. 3,678,828, Cl. 95-11.00r.
Mason, Daniel W., to Owens-Illinois, Inc. High K dielectric materials. 3,679,440, Cl. 106-39.00r.
Mason, Donald J.: *See—*
Bergy, Malcolm E.; Herr, Ross R.; and Mason, Donald J., 3,679,787.
Massachusetts Institute of Technology: *See—*
Williams, James M., 3,679,910.
Massey-Ferguson Services, N.V.: *See—*
Bennett, John S., 3,679,032.
Massie, Stephen N., to Universal Oil Products Company. Preparation of aromatic acids. 3,679,740, Cl. 260-524.00r.
Mastropole, Alfred J.: *See—*
Hague, Robert Z.; Laucks, Howard H.; and Mastropole, Alfred J., 3,678,801.
Masuda, Noboru; and Kuroyanagi, Masashi, to Denki Onkyo Co., Ltd. Contactless switching apparatus. 3,680,026, Cl. 338-32.00h.
Matsubayashi, Kanji; and Segawa, Hiroyuki, to Kuraray Co., Ltd. Elongation-set polyurethane elastomeric fibers and process of preparation. 3,679,633, Cl. 260-75.0ne.
Matsuda, Motonobu: *See—*
Ueda, Hiroshi; Yata, Kintaro; and Matsuda, Motonobu, 3,678,822.
Matsugu, Tomoyuki; Notomi, Ryota; and Kanoh, Teruchika, to Kohjin Company, Limited. Apparatus for heat-setting biaxially stretched films of thermoplastic materials. 3,678,546, Cl. 26-63.000.
Matsui, Hideo: *See—*
Asahi, Matahiko; Murakami, Hisamichi; Hasegawa, Yukio; Matsui, Hideo; and Takayanagi, Eifu, 3,679,348.
Matsunaga, Takao: *See—*
Yoshimura, Ippei; Fukue, Norihiko; Sakamoto, Hiroshi; Murofushi, Hisashi; Hiyama, Takami; and Matsunaga, Takao, 3,679,707.
Matsushita Electric Industrial Co., Ltd.: *See—*
Sekido, Satoshi; and Arita, Tomohiko, 3,679,945.
Tanegashima, Kenichiro; Kobayashi, Makoto; and Kudo, Shinichiro, 3,679,864.
Matsushita Electric Industrial Company, Limited: *See—*
Yamashita, Sadahiko, 3,680,059.
Yoshimura, Susumi; Ito, Yoshimasa; Asakawa, Shirow; and Hasegawa, Katsue, 3,679,944.
Matsuura, Shoji: *See—*
Inaba, Kohsaku; Yoshida, Seisaku; and Matsuura, Shoji, 3,679,005.
Mattel, Inc.: *See—*
Beny, Janos; Kingsbury, LC James; and Scribner, David L., 3,678,618.
Mattel, Inc., mesne: *See—*
Goldfarb, Adolph E.; Strader, Judith D.; and Strader, George C., 3,678,616.
Matthias, Guenther: *See—*
Schulz, Gerhard; and Matthias, Guenther, 3,679,739.
Matti, Leo F. Container top opener. 3,678,788, Cl. 81-3.430.
Maure, Douglas Raymond, to Optical Memory Systems, Inc. Optical logic function generator. 3,680,080, Cl. 340-347.0dd.
Mautz, William J., Sr. Jiffy vehicle brake tester pad removal tool. 3,678,561, Cl. 29-267.000.
Maxey, Alexander R., to Echo Science Corporation, mesne. Helical scanning assembly for video tape machine. 3,678,563, Cl. 29-407.000.
Maxey, Alexander R., to Echo Science Corporation, mesne. Helical scanning assembly with tape to scanner referencing apparatus. 3,679,840, Cl. 179-100.20t.
Maxon, Rodney Robert: *See—*
Braun, Edwin Julius; Maxon, Rodney Robert; Meise, Henry August, Jr.; Taylor, George William; and Witmore, Ronald Kirk, 3,679,834.
May, Harley E., to General Electric Company. Machine with improved operating head traversing workpieces with curved surfaces. 3,678,736, Cl. 73-67.80s.
Maydan, Dan: *See—*
Chesler, Ronald Benjamin; and Maydan, Dan, 3,680,000.
Mayer, Oscar, & Co., Inc.: *See—*
Bard, John C.; and Olson, Floyd C., 3,679,434.
Mayes, Nathan, to Globe Manufacturing Company. Higher heat set spandex prepared from a mixture of a polyether or polyester prepolymer and a dihydric phenol and method of preparation. 3,679,631, Cl. 260-47.0cb.
Mayes, Nathan; and Falk, Robert A., to Thiokol Chemical Corporation. Nitroso ether polymers. 3,679,755, Cl. 260-615.0bf.
Maylotte, Donald H., to General Electric Company. Method for making photopolymerized tetrafluorethylene films. 3,679,461, Cl. 117-93.310.
Mayo, Robert A.; and Ohringer, Philip, to Technicon Instruments Corporation. Container holding rotatable body with adjustable balancing feature. 3,679,130, Cl. 233-26.000.
Mazza, Lamberto, to Industrie A. Zanussi S.p.A. Safety device for sensing preventing radiation leakage from microwave-producing apparatus. 3,679,908, Cl. 307-117.000.
Mazzella, Gerald: *See—*
Golden, Richard L.; and Mazzella, Gerald, 3,679,751.
Mc Garr, John J., to USM Corporation. Process for forming a thin microporous sheet material. 3,679,783, Cl. 264-53.000.
McAuliffe, Gerald K., to International Business Machines Corporation. Fourier digital filter or equalizer and method of operation therefor. 3,679,882, Cl. 235-156.000.
McCamis, Marvin J.; and Gibson, George W., to United States of America, Navy. Electrical connector. 3,680,036, Cl. 339-60.00m.
McCord, Henry L.: *See—*
Herman, Elvin E.; and McCord, Henry L., 3,680,099.
McCormick, Wayne A. Ice bag for treating athletes. 3,678,936, Cl. 128-402.
McCulloch Corporation: *See—*
Loop, Wendell Harold, 3,678,973.
McDonald, A. Y., Mfg. Co.: *See—*
Schmitt, Joseph R., 3,679,239.
McDonald, Dean T.: *See—*
Guyaux, James R.; Le Duc, Donald; and McDonald, Dean T., 3,679,075.
McDonald, Gerald W. G., to Commonwealth Oil Refining Company, Inc. Fluidized catalytic cracking apparatus and process. 3,679,576, Cl. 208-74.000.
McDonnell Douglas Corporation: *See—*
Teng, Robert N., 3,678,745.
McGee, James Newton; and Griffin, Thomas Franklin, to Burlington Industries, Inc. Process for producing an air-impervious tire fabric. 3,679,516, Cl. 156-315.000.
McGinnis, Hebert E., to Goodrich, B. F., Company, The. Conveyor belt. 3,679,044, Cl. 198-193.000.
McGraw-Edison Company: *See—*
Funk, Stanley T., 3,678,715.
Van Dusen, Harold A., Jr., 3,679,311.
McKinney, Merle B., to Pioneer Liquor Company, Inc. Hand truck. 3,679,225, Cl. 280-47.180.
McKinney, Perry F.: *See—*
Bray, John R.; and McKinney, Perry F., 3,679,873.
McKnight, Robert A., to Singer Company, The, mesne. Visual teaching aid for fixed-base vehicle trainer. 3,678,601, Cl. 35-12.00n.
McMaster, Harold A., to Guardian Industries Corporation. Apparatus for cutting and grinding glass. 3,678,628, Cl. 51-5.000.
McMillen, William H.: *See—*
Gustafson, Walter R.; McMillen, William H.; and Lippel, Lewis, Jr., 3,680,087.
McNally, James G., Jr., to Eastman Kodak Company. Diazotype photographic elements having extended exposure latitude with specific U-V absorber. 3,679,415, Cl. 96-68.000.
McNally Pittsburg Manufacturing Corporation, The: *See—*
Pate, Robert Lee, 3,679,063.
McNitt, David H.: *See—*

Colvin, Alex D.; McNitt, David H.; and Turner, Allen H., 3,679,930.
Mead, Carver A.; and Kurtin, Stephen. Thermometer probe. 3,678,751, Cl. 73-362.0ar.
Mead Corporation, The: *See*—
Neff, Robert G., 3,679,122.
Mead Johnson & Company: *See*—
Wu, Yao Hua; and Lobeck, Walter G., 3,679,692.
Wu, Yao Hua; and Ryan, Richard P., Jr., 3,679,702.
Mead Johnson and Company: *See*—
Robbins, Carl L., 3,678,884.
Mechel, Fridolin; and Kummermehr, Hans, to Grunzweig & Hartmann Aktiengesellschaft. Mineral wool made from silicate glass comprising iron oxides. 3,679,443, Cl. 106-50.000.
Meidan, Reuven, to Applied Digital Data Systems, Inc. Data transmission echoing unit. 3,680,045, Cl. 340-146.1ba.
Meier, Werner: *See*—
Huber, Max; and Meier, Werner, 3,679,537.
Meinke, Hans H.; Ullrich, Kurt; and Wesch, Ludwig. Wide band interference absorber and technique for electromagnetic radiation. 3,680,107, Cl. 343-18.00a.
Meise, Henry August, Jr.: *See*—
Braun, Edwin Julius; Maxon, Rodney Robert; Meise, Henry August, Jr.; Taylor, George William; and Witmore, Ronald Kirk, 3,679,834.
Melillo, Dominic S. Reversible film camera with selectable exposure sizes. 3,678,834, Cl. 95-36.000.
Mello, William R.; and Warren, James A., to Colt Industries Operating Corporation, mesne. Tool changer. 3,678,572, Cl. 29-568.000.
Menzi, Hans, to Mettler Instrumente AG. Weighing apparatus with damping means. 3,679,013, Cl. 177-184.000.
Menzies, Robert W., to Canadian Patents and Development Limited. Synchronous relutance motors and method of starting. 3,679,924, Cl. 310-163.000.
Merck & Co., Inc.: *See*—
Arth, Glen E.; and Rasmusson, Gary H., 3,679,717.
Firestone, Raymond A., 3,679,711.
Firestone, Raymond A., 3,679,712.
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Merit Abrasive Products, Inc.: *See*—
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Merli, Carlo: *See*—
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Merlin Gerin Societe Anonyme: *See*—
Pelenc, Yves, 3,679,952.
Merrill, Edward W., to Estin, Hans, Cronkhite, Leonard W., Jr., Wolbach, William W.; trustees of and Charles River Foundation, The. Capsules and method for testing capsules for wall integrity. 3,678,756, Cl. 73-49.300.
Merrill, Edward W., to Estin, Hans H., Cronkhite, Leonard W., Jr., Wolbach, William W.; trustees of and Charles River Foundation, The. Polysiloxanes in admixing with hydrates or carbonates useful for removing hydrocarbons from tobacco smoke. 3,679,625, Cl. 260-37.0sb.
Messer Griesheim GmbH: *See*—
Neander, Erich, 3,679,191.
Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See*—
Butter, Karl, 3,678,802.
Mestetsky, Thomas S.; and Smolin, Edwin M., to GAF Corporation. Compositions of poly (alkyl vinyl ether/maleic anhydride) with phosphate ester surfactant. 3,679,623, Cl. 260-31.20r.
Metropoliton Industries, Inc.: *See*—
Taylor, Robert B., 3,679,254.
Mettler Instrumente AG: *See*—
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Metzger, Robert W., Jr.: *See*—
Buck, Robert E.; Metzger, Robert W., Jr.; Rittmann, Albert D.; and Sayers, Eugene H., 3,679,946.
Mevissen, Ernst A.: *See*—
Coulter, Stanley M.; and Mevissen, Ernst A., 3,679,195.
Meyer, Clarence G.: *See*—
Janssen, Donovan M.; and Meyer, Clarence G., 3,679,283.
Mezey, Eugene J., to Procter & Gamble Company, The. Process for the preparation of an anhydride of trivalent phosphorus using excited helium. 3,679,560, Cl. 204-157.10s.
Michaelis, David E., to Plastics Development Corporation of America. Inexpensive camera. 3,678,839, Cl. 95-60.000.
Michel, Hartmut: *See*—
Schulten, Reinhard; and Michel, Hartmut, 3,679,517.
Michelson, Louis, to Lion Precision Corporation. Micrometer thickness gage. 3,679,972, Cl. 324-61.00r.
Michelson, Malvin J.; and Doyle, William P., to Texaco Inc. Process for preparing disubstituted pyrazines. 3,679,680, Cl. 260-250.00r.
Micro Copper Corporation: *See*—
Linton, Denton C.; Zinki, Andrew; and Ballam, Jack, 3,679,399.
Micro Seiki Co., Ltd.: *See*—
Cho, Masanobu, 3,679,843.
Microdot, Inc.: *See*—
Eggleston, Gerard; and Bosworth, George, 3,678,753.
Midgley, Edward L.; and Carlson, Reuben C., to Standard Kollsman Instrument Corporation. Solid state television tuner with voltage variable capacitors. 3,679,980, Cl. 325-464.000.
Migliaccio, Edward P.: *See*—
Migliaccio, Luigi; and Migliaccio, Edward P., 3,678,872.
Migliaccio, Luigi; and Migliaccio, Edward P. Emergency underwater escape vehicle. 3,678,872, Cl. 114-16.700.
Milgram, Alvin A., to Du Pont de Nemours, E. I., and Company. Lead-containing metallizations. 3,679,439, Cl. 106-1.000.
Miller, Alfred H.; and Dean, George A., to Libbey-Owens-Ford Company. Method and apparatus for handling sheet material. 3,679,076, Cl. 214-152.000.
Miller, Arthur: *See*—
Keneman, Scott Allen; and Miller, Arthur, 3,680,060.
Miller, Darrow L., to North American Rockwell Corporation. Tubular transducer and dry couplant therefor. 3,678,737, Cl. 73-71.500.
Miller, Donald L., to Bendix Corporation, The. Self-adjusting electromagnetic clutch. 3,679,034, Cl. 192-111.00a.
Miller, Harold L. Safety reverse for automatic parking gates. 3,678,622, Cl. 49-28.000.
Miller, Myrl J.: *See*—
Bullock, Michael K.; Miller, Myrl J.; and Voit, William F., Jr., 3,679,099.
Miller, Rodney D.; and Nielsen, John K., to FMC Corporation. De-vining melons. 3,678,677, Cl. 56-327.000.
Miller, Stanley J.: *See*—
Krupp, Robert F.; and Miller, Stanley J., 3,679,091.
Miller, Stanley J.; and Davidson, James P., to National Can Corporation. Vented curl for aerosol dome. 3,679,090, Cl. 220-67.
Miller, Wayne H.: *See*—
Du Bois, Robert Clark; and Miller, Wayne H., 3,679,306.
Milligan, Terry W.: *See*—
Buckler, Sheldon A.; Milligan, Terry W.; and Rogers, Howard G., 3,679,409.
Minagawa, Nobuhiko: *See*—
Kasugai, Tsuneo; and Minagawa, Nobuhiko, 3,679,455.
Minasy, Arthur J., to Knogo Corporation. Label attachment means. 3,678,608, Cl. 40-20.00r.
Miniature Electronic Components Corporation: *See*—
Pihl, George E., 3,680,083.
Minnesota Mining and Manufacturing Company: *See*—
Barclay, Ralph R., 3,679,814.
Hinderaker, Philip D.; and Nelson, Karl E., 3,679,505.
Moore, George G. I.; and Gerster, John F., 3,679,695.
Mukherjee, Joan M. W., 3,679,414.
Minolta Camera Kabushiki Kaisha: *See*—
Kudo, Tetsuo; Nakatani, Kozo; and Koda, Kiyoyasu, 3,679,387.
Ueda, Hiroshi; Yata, Kintaro; and Matsuda, Motonobu, 3,678,822.
Minor, Paul S.: *See*—
Vancamp, Raymond M.; Minor, Paul S.; and Muren, Albert P., Jr., 3,679,373.
Minshull, John F.: *See*—
Arulpragasam, Jeganandaraj A.; Binks, Dennis C.; Holmes, John J.; Minshull, John F.; Pinnell, Martin C.; and Williams, Clive, 3,680,052.
Minzenberger, Thomas C., to Zenith Radio Corporation. Process of back etching a perforated metal mask for color TV tubes. 3,679,499, Cl. 156-7.000.
Mita Industrial Company Limited: *See*—
Yokoyama, Taizo, 3,679,420.
Mitchell, Douglas, to Technicon Instruments Corporation. Analysis of fluids. 3,678,734, Cl. 73-61.10r.
Mitrofanoff, Nicholas S.: *See*—
Bunker, William H.; Kerr, John W.; Mitrofanoff, Nicholas S.; and Swearingen, Kent W., 3,680,054.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Nitta, Tohei; Shibuya, Yoshikazu; and Fujiwara, Yukio, 3,679,939.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Tsukamoto, Hidehiko; and Maeda, Nobutaka, 3,678,719.
Mitsui Toatsu Chemicals, Inc.: *See*—
Asahi, Matahiko; Murakami, Hisamichi; Hasegawa, Yukio; Matsui, Hideo; and Takayanagi, Eifu, 3,679,348.
Mitsui Toatsu Chemicals Incorporated: *See*—
Kii, Toshimichi; and Suka, Motoshi, 3,679,651.
Mittelsteadt, Glen L.: *See*—
Herter, George L.; and Mittelsteadt, Glen L., 3,678,858.
Mittler, Martin A.: *See*—
Newman, Richard J.; Mittler, Martin A.; and Blickstein, Martin J., 3,679,940.
Miyamoto, Masao: *See*—
Kudamatsu, Akio; Miyamoto, Masao; and Fukazawa, Nobuo, 3,679,726.
Miyasaka, Mamoru; Kurita, Hirohisa; and Furihata, Hideo, to Kabushiki Kaisha Suwa Seikosha. Structure for positioning a watch stem. 3,678,682, Cl. 58-58.000.
Miyatani, Kazuo: *See*—
Okamoto, Fumio; Wada, Yasuo; and Miyatani, Kazuo, 3,679,379.
Mizuma, Noriaki; and Yokota, Yuzo, to FMC Corporation. Method of printing textiles using a printing paste containing β-1,4 glucan. 3,679,352, Cl. 8-62.000.
Mobil Oil Corporation: *See*—
Burress, George T.; and Willis, James L., Jr., 3,679,741.

Lake, Connie, 3,679,126.

Mochida, Yoshihiro: *See—*
Hiragaki, Shigeho; and Mochida, Yoshihiro, 3,679,309.

Modern Mold & Tool Corporation: *See—*
Liguori, Thomas A., 3,679,318.

Moerkens, Jozef Cornelis, to U.S. Philips Corporation. Circuit arrangement for the ignition and alternating current supply of a gas and/or vapour discharge lamp. 3,679,936, Cl. 315-205.000.

Mohr, Reinhard: *See—*
Lohe, Konrad; Mohr, Reinhard; Mundlos, Eberhard; and Freb, Hermann, 3,679,358.

Mohrman, Robert K.; Kifer, Paul E.; and Obosrh, Edward V., to Ralston Purina Company. Cat food with hexamic acid flavorant. 3,679,429, Cl. 99-2.000.

Molins Limited: *See—*
Titow, Witold, 3,679,612.

Mollenbeck, Klaus, to Siemens Aktiengesellschaft. Device for measuring currents in a high voltage conductor including a controlled optical arrangement. 3,679,974, Cl. 324-96.000.

Moller, Tilo: *See—*
Seidel, Alex; Moller, Tilo; and Weldle, Helmut, 3,678,800.

Monsanto Chemicals Limited: *See—*
Volans, Peter, 3,679,111.

Monsanto Company: *See—*
Benson, Royal H.; and Bodre, Robert J., 3,679,366.
Bray, John R.; and McKinney, Perry F., 3,679,873.
Schomburg, Noel L., 3,679,592.
Schuck, James M.; and Wildi, Bernard S., 3,679,653.
Smith, Terrill D., 3,679,587.

Monsel,Philippe: *See—*
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Monsun-Tison AB: *See—*
Stenlund, Stig Gote, 3,679,276.

Montecatini Edison S.p.A.: *See—*
Natta, Giulio; Danusso, Ferdinando; and Ferruti, Paolo, 3,679,643.
Vecchio, Martino; Cammarata, Italo; and Pattore, Vittorio, 3,679,767.

Montgomery, Helene Irene: *See—*
Montgomery, William T. S., 3,679,143.

Montgomery, William T. S., to Montgomery, Helene Irene. Shavings making machines. 3,679,143, Cl. 241-280.000.

Montillon, Henry A.: *See—*
Bailey, Robert C.; Estes, Harry A.; James, Glen S.; Klug, James R.; Montillon, Henry A.; Myring, Verne E.; Robertson, Orville H.; Sargeant, Blaine W.; and Sorensen, Neal E., 3,679,200.

Montone, Liber J., to Western Electric Company, Incorporated. Measuring system. 3,679,820, Cl. 178-6.000.

Moodie, Donald E., to Polaroid Corporation. Photographic apparatus including removable validation plate. 3,678,818, Cl. 95-1.100.

Moog, Inc.: *See—*
Hague, Robert Z.; Laucks, Howard H.; and Mastropole, Alfred J., 3,678,801.

Mooi, John: *See—*
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Mookherjee, Braja D.: *See—*
Grossman, James D.; Mookherjee, Braja D.; De Simone, Robert; and Theimer, Ernst T., 3,679,749.

Mookherjee, Braja D., to International Flavors & Fragrances Inc. Hexahydro-1,4,9,9-tetramethyl-4,7-methanoazulenones. 3,679,750, Cl. 260-586.00a.

Moore, Carl, to Dow Chemical Company, The. Carpet backsizing with latexes of acidic olefin copolymers. 3,679,469, Cl. 117-161.0uz.

Moore, Eugene R.; and Park, William R. R., to Dow Chemical Company, The. Method for making hydrazine derivatives of copolymers of vinyl aromatic compounds and α,β-unsaturated dicarboxylic acids or anhydrides. 3,679,640, Cl. 260-78.50t.

Moore, Francis C.; and Perkinson, Leon A., to Moore-Perk Corporation. Surgical sponge or bandage. 3,678,933, Cl. 128-296.000.

Moore, George G. I.; and Gerster, John F., to Minnesota Mining and Manufacturing Company. Certain Thiazolylhaloalkanesulfonanilides. 3,679,695, Cl. 260-302.00s.

Moore-Perk Corporation: *See—*
Moore, Francis C.; and Perkinson, Leon A., 3,678,933.

Moreau, Jean-Noel, to Thomson-CSF. Microwave band-pass filter having constant bandwidth as filter is tuned. 3,680,012, Cl. 333-73.00w.

Morf, Max; Wenger, Markus; and Feisst, Jutta, to Ciba-Geigy Corporation. Reaction products of carboxylic acid polymers, alkylenimines and alkylene oxides. 3,679,621, Cl. 260-29.60h.

Morgan, Charles R.; and Daniels, David A., to Grace, W. R., & Co. Process for preparing methylenebisiminodiacetonitrile. 3,679,728, Cl. 260-465.5.

Morgan, George W.; and Whitney, Douglas S. Conveyor system. 3,679,045, Cl. 198-203.000.

Morgese, Nicholas V., to Continental Can Company, Inc. Carton with gussetted ends. 3,679,121, Cl. 229-40.000.

Mori, Chiharu; and Ota, Katsumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. System for controlling a camera shutter. 3,678,826, Cl. 95-10.0ct.

Morimoto, Yoshiro, to Nissan Motor Company, Limited. Inboard-outboard drive for watercraft. 3,678,879, Cl. 115-35.000.

Morita, Katsura; and Kawashima, Kenya, to Takeda Chemical Industries, Ltd. Tetrahydrocyclopropadibenzazepine derivatives. 3,679,662, Cl. 260-239.00d.

Morlock, Harry K.: *See—*
Jones, Howard S., Jr.; Witte, Joseph J.; and Morlock, Harry K., 3,680,130.

Morrish, James Francis Gerrards Cross: *See—*
Wakefield, Norman; Alexander, Stuart John; Morrish, James Francis Gerrards Cross; Beck, William; Groves, Raymond Sturgis; and Harvey, Michael J., 3,678,644.

Morrison, Glenn C.; and Shavel, John, Jr., to Warner-Lambert Company. Pyridyl β-ketosulfoxides and sulfones. 3,679,691, Cl. 260-294.80f.

Morrow, William R.: *See—*
Bryant, Kenneth Owen; Morrow, William R.; and Logue, Vernon J., 3,680,088.

Morse, Stephen P.: *See—*
Baskin, Herbert B.; Belady, Laszlo A.; Evangelisti, Carlo J.; and Morse, Stephen P., 3,680,078.

Morse-Brown, Austin G., to Bath Institute of Medical Engineering, The. Invalid chairs. 3,679,260, Cl. 297-338.000.

Morton-Norwich Products, Inc., mesne: *See—*
Diamond, Horace W., 3,679,375.

Moschytz, George Samson, to Bell Telephone Laboratories, Incorporated. Active RC wave transmission network using single amplifier to achieve all-pass transfer function. 3,679,987, Cl. 330-107.000.

Mosier, John L.; and Peterson, Richard J., to Sylvania Electric Products, Inc. Printed circuit board connector assembly. 3,680,032, Cl. 339-17.00f.

Moss, John Arthur, to Simon, Henry, Limited. Web feeding apparatus. 3,679,117, Cl. 226-199.000.

Moss, Vladimir. Transparent container and lettered cubes puzzle. 3,679,213, Cl. 273-156.000.

Motoren- und Turbinen-Union Munchen GmbH: *See—*
Hansen, Wolfgang, 3,678,555.

Motorola, Inc.: *See—*
Black, James R.; and Gurev, Harold S., 3,680,028.
Foltz, James W., 3,679,913.
Free, Maurice G.; and Wisseman, Leo L., 3,679,963.
Hays, Robert G., 3,679,502.
Rogers, Leo C.; Nikirk, Roger G.; and Heitz, Alfred J., 3,679,470.

Mott, Carl W., to Mott Corporation. Mower blade and connection therefor. 3,678,668, Cl. 56-294.000.

Mott Corporation: *See—*
Mott, Carl W., 3,678,668.

Mougin, George, to Sodeteg, Inc. Building construction of material therebetween. 3,678,638, Cl. 52-79.000.

Mouille, Rene Louis, to Societe Nationale Industrielle Aerospatiale. Rotor hubs on rotary wing aircraft. 3,679,322, Cl. 416-141.000.

Mowbray, Dorian Farrar: *See—*
Dillon, Stanley Bernard; Mowbray, Dorian Farrar; and Kamp, Kenneth Albert Walters, 3,679,846.

Moysey, John A.: *See—*
De Santis, Alfred J.; Beers, Le Roy W.; White, James A.; and Moysey, John A., 3,680,058.

Mozes, Alexander. Hygienic device for detecting unintentional urination. 3,678,928, Cl. 128-138.000.

Mudroch, Otokar: *See—*
Addinall, Ramon L.; Lewis, William T.; and Mudroch, Otokar, 3,679,513.

Mueller, Fred: *See—*
Buecheler, Paul; and Mueller, Fred, 3,679,685.

Mueller, Hans, to Grapha Maschinenfabrik Hans Mueller AG. Transfer apparatus. 3,679,072, Cl. 214-6.0ba.

Muellner, Frank E.; and Sarkozi, Lewis P., to Nus Corporation. Nuclear reactor fuel rod support grid. 3,679,546, Cl. 176-78.000.

Mukai, Tsuneo: *See—*
Watanabe, Shigeo; Sogi, Toshiyuki; and Mukai, Tsuneo, 3,678,982.

Mukherjee, Joan M. W., to Minnesota Mining and Manufacturing Company. Lithographic plate and method. 3,679,414, Cl. 96-67.000.

Mulcahy, Harry W.; Bushnell, Eldon W.; and Kaim, John W., to Amsted Industries, Incorporated. Multiple unit brake. 3,679,028, Cl. 188-202.000.

Mulhall, Brian Edward: *See—*
Mac Nab, Robert Beattie; and Mulhall, Brian Edward, 3,679,920.

Mulhall, James Edward, to Long Island Oyster Farms, Inc. Process for removing crepidula from oyster shells. 3,679,478, Cl. 134-25.00r.

Mulhouse: *See—*
Juillard, Yves, 3,678,968.

Mull, Ralph L., Jr.: *See—*
Hiday, David R.; and Mull, Ralph L., Jr., 3,679,990.

Muller, Alfred; and Fink, Arno, to Siemens Aktiengesellschaft. Superconductive alloy and production thereof. 3,679,401, Cl. 75-134.00v.

Muller, Jacques. Filtering and aerating jet breaker. 3,679,054, Cl. 210-95.000.

Muller, Jean-Nicolas: *See—*
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Mullet, Sidney George: *See—*
Wyatt, James Andrew Stewart; Chapman, Clifford Victor Gascoyne; Solt, George Stefan; and Mullet, Sidney George, 3,679,059.

Munchel, Eugene A.; and Thornton, Henry M., to Ashcombe Products Company. Cleaning attachment for elevated spray device. 3,679,319, Cl. 401-138.000.
Mundlos, Eberhard: *See—*
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Murakami, Hisamichi: *See—*
Asahi, Matahiko; Murakami, Hisamichi; Hasegawa, Yukio; Matsui, Hideo; and Takayanagi, Eifu, 3,679,348.
Murakami, Tsukasa: *See—*
Inaba, Kohsaku; Yoshida, Seisaku; and Matsuura, Shoji, 3,679,005.
Murakami, Yoshio; and Takasi, Yamazaki, to Tokyo Shibaura Electric Co., Ltd. Reflector assembly for reflecting the vapors of high temperature volatile materials. 3,678,889, Cl. 118-49.000.
Muren, Albert P., Jr.: *See—*
Vancamp, Raymond M.; Minor, Paul S.; and Muren, Albert P., Jr., 3,679,373.
Murofushi, Hisashi: *See—*
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Murphy, David Duncan: *See—*
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Murphy, Frank W., Manufactures, Inc.: *See—*
Lawrence, Charles R., 3,678,758.
Murphy, James P., to Pitney-Bowes, Inc. Fluorescent lamp idling circuit. 3,679,932, Cl. 315-106.000.
Murphy, Kevin E.: *See—*
Kippax, Donald L.; and Murphy, Kevin E., 3,679,766.
Musgrave, Ray D., to Western Printing Machinery Co. Doctor blade oscillatable between plate cylinder and ink transfer roll. 3,678,849, Cl. 101-157.000.
Musser, Malcolm E. Unload, check, and bag apparatus for supermarkets. 3,678,660, Cl. 53-255.000.
Musser, Malcolm E. Bag holder and opening apparatus. 3,679,096, Cl. 221-56.000.
Mustert, Rudolf, to Landis & Gyr AG. Apparatus for optically testing the genuineness of bank notes and other tokens of value. 3,679,314, Cl. 356-71.000.
Myers, Clifford E., to Xercon, Inc., mesne. Light-operated control device. 3,679,906, Cl. 250-239.000.
Myers, Robert H.: *See—*
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Myring, Verne E.: *See—*
Bailey, Robert C.; Estes, Harry A.; James, Glen S.; Klug, James R.; Montillon, Henry A.; Myring, Verne E.; Robertson, Orville H.; Sargeant, Blaine W.; and Sorensen, Neal E., 3,679,200.
Nacarato, Ralph A. Mounting means for windshield light filter. 3,679,255, Cl. 296-97.00c.
Nachbur, Hermann; and Maeder, Arthur, to Ciba-Geigy AG. Amide and carbamate diphosphonates and process for their manufacture. 3,679,778, Cl. 260-932.000.
Nachtman, Elliot Simon, to La Salle Steel Company. Hot ductility of steels containing tellurium. 3,679,400, Cl. 75-123.0aa.
Nagel, Norman Eugene. Toy computer capable of limited computation and simulating large computer. 3,678,614, Cl. 46-39.000.
Nagot, Marc N.; and Zucker, Fredric E., to Pitney-Bowes, Inc. Credit card and method of polishing. 3,679,449, Cl. 117-1.000.
Naik, Navnitrai Nagarji: *See—*
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,679,657.
Nakada, Yasuo; and Takita, Hideo, to Sony Corporation. Display system. 3,679,933, Cl. 315-169.0tv.
Nakatani, Kozo: *See—*
Kudo, Tetsuo; Nakatani, Kozo; and Koda, Kiyoyasu, 3,679,387.
Nance, Joseph W., to Magic Chef, Inc. Broiler drawer and slide. 3,679,274, Cl. 308-3.600.
Nardi, Giancarlo, to Compagnia Italiana Westinghouse Freni e Segnali. Carburetor system having a fluidic proportional amplifier. 3,679,185, Cl. 261-36.00a.
Nassry, Assadullah: *See—*
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National Bank and Trust Company of Central Pennsylvania; administrator, d.b.m.c.t.a. of the estate of Beach, Willard C.; deceased, and administrator c.t.a. of the estate of Beach, Mary B.: *See—*
Grote, George A., 3,678,662.
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National Can Corporation: *See—*
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National Research Development Corporation: *See—*
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National-Standard Company: *See—*
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Natta, Giulio; Danusso, Ferdinando; and Ferruti, Paolo, to Montecatini Edison S.p.A. Copolymers of acrylonitrile with nitrogenous monomers and process for their preparation. 3,679,643, Cl. 260-85.50r.
Naumenko, Viktor Dmitrievich: *See—*
Rubinshtein, Sholom Yakovlevich; Babin, Mikhail Artemievich; Gutman, Anatoly Lvovich; Naumenko, Viktor Dmitrievich; Orlov, Evgeny Mikhailovich; Presman, Vladimir Alexandrovich; Maev, Veniamin Evnovich; and Bondarenko, Fedor Alexeevich, 3,678,664.
Neander, Erich, to Messer Griesheim GmbH. Running carriage for a coordinate gas cutting machine. 3,679,191, Cl. 266-23.00k.
Nedelec, Lucien: *See—*
Bucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, 3,679,718.
Neff, Robert G., to Mead Corporation, The. Carton having composite bottom. 3,679,122, Cl. 229-40.000.
Neff, William S., to Westinghouse Electric Corporation. Flexible insulating sheet containing boron nitride fibers and method for forming the same. 3,679,532, Cl. 161-59.000.
Negersmith, Kent M.; and Calogero, William J., to Technicon Instruments Corporation. Apparatus for determining the pack volume of particulates in liquid mixtures. 3,679,367, Cl. 23-259.000.
Neitzel, Ulrich E. G.: *See—*
Flint, Hans Gerhard; and Neitzel, Ulrich E. G., 3,679,376.
Nellis, Stewart; Kopf, Joseph Ellis; and Reti, Adrian R., to Technical Wire Products Inc. Electrical interconnector. 3,680,037, Cl. 339-61.00m.
Nelson, Karl E.: *See—*
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Nelson, Philip E., to Purdue Research Foundation. Aseptic storage and valving system. 3,678,955, Cl. 137-238.000.
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Neumann, Dietrich; and Pattberg, Georg, to Vereinigte Flugtechnische Werke-Fakker GmbH. Testing of redundant control systems. 3,680,069, Cl. 340-214.000.
Neumann, Jorg: *See—*
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Newman, Daniel J.; and Klein, Louis A., to Chemical Construction Corporation. Separation of ammonia in a thermosyphon evaporator. 3,679,549, Cl. 203-12.000.
Newman, Joel S.; and Jernigan, Marvin E., to Biometrics, Inc. Automatic electronic reading pattern analyzer. 3,679,295, Cl. 351-6.000.
Newman, Richard J.; Mittler, Martin A.; and Blickstein, Martin J., to Voltronics Corporation. Trimmer capacitor. 3,679,940, Cl. 317-101.00c.
Newton, Richard C., to Phillips Petroleum Company. Yarn texturing. 3,678,547, Cl. 28-1.600.
Nguyen, Van-Tran; and Shah, Jagdeep Chandravadan, to Bell Telephone Laboratories, Incorporated. Broadband optically-pumped semiconductive lasers. 3,679,994, Cl. 331-94.000.
Nichols, Harry R.: *See—*
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Nichols, John B.; and Gamaunt, Roger L., to Hughes Tool Co. Heavy lift helicopter with vertically adjustable cockpit. 3,679,154, Cl. 244-17.110.
Nicolet, Charles F., to Standard Oil Company. Process for removal of catalyst complex. 3,679,770, Cl. 260-674.00a.
Nieboer, Pieter Hendrik, to Demag Aktiengesellschaft. Valve packing for metallurgical shaft furnaces. 3,679,193, Cl. 266-27.000.
Niedermiller, Herbert C.: *See—*
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Nippon Denso Kabushiki Kaisha: *See—*
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Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Kogaku K. K.: *See—*
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Nippon Kogaku K.K.: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Paint Co., Ltd.: *See—*
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Nippon Sheet Glass Co., Ltd.: *See—*
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Nippon Steel Corporation: *See—*
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Nippon Telegraph and Telephone Public Corporation: *See—*
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Nise, Wilfred C.; and Lowder, Dale E., to Clarke Floor Machine Company; division of Studebaker Corporation. Heavy duty vacuum cleaner. 3,678,524, Cl. 15-49.

Nishijima, Tsutomu: *See—*
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Nishikawa, Hisashi: *See—*
Ichinose, Noboru; Yokoyama, Katsunori; and Nishikawa, Hisashi, 3,679,919.

Nishimura, Sadanori, to Honda Giken Kogyo Kabushiki Kaisha. Pressure fluid circuit in automatic transmission apparatus. 3,678,952, Cl. 137-53.000.

Nishino, Keigo: *See—*
Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; Ushiyama, Keiichi; Shinoda, Hirotaka; and Hasegawa, Yoshinori, 3,679,730.

Nissan Motor Company Limited: *See—*
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Morimoto, Yoshiro, 3,678,879.

Nissen, Walter D.; and Hammond, Philip G., to Kimberly-Clark Corporation. Interfolded sheet material assembly. 3,679,094, Cl. 221-50.000.

Nissen, Walter D.; and Hammond, Philip G., to Kimberly-Clark Corporation. Folded sheet material and method and apparatus therefor. 3,679,095, Cl. 221-50.000.

Nisshin Flour Milling, Ltd.: *See—*
Yokoyama, Fujihiko; Yoneyama, Tohru; and Sato, Shigehiko, 3,679,438.

Nitta, Tohei; Shibuya, Yoshikazu; and Fujiwara, Yukio, to Mitsubishi Denki Kabushiki Kaisha. Lightning arrester. 3,679,939, Cl. 317-62.000.

Nixon, Charles D. Wheel washing device. 3,679,134, Cl. 239-70.000.

NL Industries, Inc.: *See—*
Rutt, Truman C., 3,679,950.

Nobusawa, Tsukumo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic exposure controls for cameras. 3,678,825, Cl. 95-10.0ct.

Noel, Leona M.; and Hagel, Leo J. Portable hair washing and colouring unit. 3,678,943, Cl. 132-9.000.

Noesges, Raymond: *See—*
Hansen, Robert N.; Hempel, George T.; and Noesges, Raymond, 3,679,026.

Nolan, George J.; and Holm, Vernon C. F., to Phillips Petroleum Company. Dehydrogenation catalysts. 3,679,601, Cl. 252-437.000.

Nolan, Sean Olic, to Marconi Company Limited, The. Omnidirectional orthogonal slanted dipole array. 3,680,148, Cl. 255/080/3/0/.

Nolan, Thomas Hoyt: *See—*
Duffek, Kenneth John; and Nolan, Thomas Hoyt, 3,680,076.

Nolte, Albert C., Jr.: *See—*
Ludwig, Frederic G., 3,679,302.

Nomura, Yoshiro. Device of walking legs for a toy animal. 3,678,617, Cl. 46-149.

Nonn, Gerhard: *See—*
Ostwald, Fritz; Bender, Alfred; and Nonn, Gerhard, 3,678,954.

Norbert, Stuttgart: *See—*
Scholl, Hermann; Norbert, Stuttgart; Gansert, Willi; and Arnold, Herbert, 3,678,904.

Nord, Sven Gustaf. Dishwasher device causing an aperiodical water flow. 3,678,957, Cl. 137-268.000.

Norddentsche Affinerie: *See—*
Haberland, Erich, and; and Perkow, Werner, 3,679,359.

Nordgren, Alfred A., to Dunn, W. E., Mfg. Co. Apparatus and method for cage rolling and welding. 3,678,971, Cl. 140-107.000.

Norota, Susumu: *See—*
Fukuda, Masao; Goto, Hachiro; Norota, Susumu; and Fujisawa, Yukimasa, 3,679,533.

North American Aviation, Inc.: *See—*
Bayle, Guy P.; and Johnson, Douglas A., 3,680,094.
Kuhn, Richard B., 3,679,825.

North American Philips Corporation: *See—*
Crowell, Merton Howard, 3,679,826.

North American Rockwell Corporation: *See—*
Bixby, Leo A., 3,679,016.
Miller, Darrow L., 3,678,737.
O'Donnell, Cedric F.; Platzek, Richard C.; and Sweeney, James S., 3,680,075.
Valstar, Jacob E., 3,680,086.

North, William L.; and Beckett, William J., to Forenta, Limited. Control system for garment finishing apparatus. 3,679,106, Cl. 223-73.000.

Northern Illinois Gas Company: *See—*
Dufour, Raymond J.; and Grimm, James J., 3,678,560.

Norton Company: *See—*
Washburn, Malcolm E., 3,679,444.

Nothmann, Gerhard A., to Robertson Photo-Mechanix, Inc. Equilibrated copyboard. 3,679,308, Cl. 355-75.000.

Notomi, Ryota: *See—*
Matsugu, Tomoyuki; Notomi, Ryota; and Kanoh, Teruchika, 3,678,546.

Noumi, Makoto: *See—*
Seki, Susumu; Noumi, Makoto; and Takaoka, Tadashi, 3,679,879.

Novack, Robert M., to Warner-Lambert Company. Process for obtaining 3-trans-dimethylamino- 4-phenyl-4-trans-carbethoxy-Γ¹-cyclohexene. 3,679,732, Cl. 260-471.00a.

Novar Corporation: *See—*
Bennett, William C., 3,679,037.

Novocherkassy Ordena Trudovogo Krasnogo Znameni: *See—*
Ulyanitsky, Evgeny Mefodievich; and Podgorny, Eduard Vasilievich, 3,679,937.

Nowell, John R., to Honeywell Information Systems Inc. Over-current detector. 3,679,964, Cl. 323-9.000.

Nowicki, Carmen D. T.; and Grammer, Maurine P. Loop stitching device of rigid standard length, or adjustable length, slidably mounted in standard base. 3,678,709. Cl. 66-4.000.

Nus Corporation: *See—*
Muellner, Frank E.; and Sarkozi, Lewis P., 3,679,546.

Nutini, Leo G.: *See—*
Cook, Elton S.; and Nutini, Leo G., 3,679,793.

Nutt, Roy, mesne: *See—*
Beightol, Leroy Earl, 3,679,450.

Nutt, Wendell Glenn, to Bell Telephone Laboratories, Incorporated. System for maintaining low relative humidity in telephone cables and other enclosures. 3,679,810, Cl. 174-16.00r.

Nystuen, Marcus I., to Economics Laboratory, Inc. Electronic control means for dispensing apparatus. 3,680,070, Cl. 340-244.000.

Oborsh, Edward V.: *See—*
Mohrman, Robert K.; Kifer, Paul E.; and Oborsh, Edward V., 3,679,429.

O'Brien, John C.; deceased (by O'Brien, Violet D.; executrix), to Jack-O-Line Corporation. Veneer tenderizing apparatus. 3,678,974, Cl. 144-2.00r.

O'Brien, Samuel James: *See—*
Weissbein, Leonard; and O'Brien, Samuel James, 3,679,351.

O'Brien, Violet D.: *See—*
O'Brien, John C., 3,678,974.

Ochsner, Willi: *See—*
Kretzschmar, Heinz; Chlebus, Rold; and Ochsner, Willi, 3,679,040.

O'Connor, Lawrence T.; Brierley, James A.; and Bhappu, Roshan B., to Regents, New Mexico Institute of Mining and Technology. Bacterial leaching process. 3,679,397, Cl. 75-101.000.

O'Donnell, Cedric F.; Platzek, Richard C.; and Sweeney, James S., to North American Rockwell Corporation. System for composition of symbols. 3,680,075, Cl. 340-324.00a.

Oesterhelt, Gerhard; and De Bucs, Eugen Szabo, to Siemens-Schuckertwerke Aktiengesellschaft. Method for manufacturing homogeneous bodies from semiconductor alloys. 3,678,986, Cl. 164-51.000.

Oetinger, Norman, to American Massage Sales and Manufacturing Corporation. Pulsating vibratory massaging appliance. 3,678,923, Cl. 128-33.000.

Ogawa, Akira: *See—*
Shiba, Keisuke; Tsubota, Motohiko; Sato, Akira; Ikeda, Tadashi; and Ogawa, Akira, 3,679,428.

Ogawa, Juro; and Fujimoto, Yoshiaki, to Japan Radio Company, Limited. Elapsed time indicator having color indication. 3,679,976, Cl. 324-182.000.

O'Hare, Louis Richard. Shock plasma earth drill. 3,679,007, Cl. 175-16.000.

Ohashi, Yoshio, to Nippon Gakki Seizo Kabushiki Kaisha. Speaker box. 3,679,022, Cl. 181-31.00b.

Ohmi, Atsushi: *See—*
Watabe, Shigeru; and Ohmi, Atsushi, 3,678,687.

Ohringer, Philip: *See—*
Mayo, Robert A.; and Ohringer, Philip, 3,679,130.

Ohta, Kimio: *See—*
Campbell, George Thomas Richardson; and Ohta, Kimio, 3,678,875.

Ohta, Wasaburo; Kasuya, Kazuhiko; and Yamauchi, Masayuki, to Kabushiki Kaisha Ricoh. Magnetic cascade development device for dry process electrophotography. 3,678,895, Cl. 118-637.000.

Oizumi, Chihiro: *See—*
Tabata, Yoneho; and Oizumi, Chihiro, 3,679,562.

Ojala, William K.: *See—*
Baker, Thomas D.; and Ojala, William K., 3,678,909.

Okamoto, Fumio; Wada, Yasuo; and Miyatani, Kazuo, to RCA Corporation. Magnetic compositions. 3,679,379, Cl. 23-367.000.

Okamoto, Tadashi: *See—*
Yamamoto, Hisao; Okamoto, Tadashi; and Kobayashi, Tsuyoshi, 3,679,672.

Okano, Keigo: *See—*
Wada, Yoshiyo; Kinjo, Hisao; and Okano, Keigo, 3,679,822.

O'Keeffe, Terence W.: *See—*
Handy, Robert M.; Angello, Stephen J.; Malmberg, Paul R.; and O'Keeffe, Terence W., 3,679,497.

Oki, Toshihiko: *See—*
Saito, Toshiaki; and Oki, Toshihiko, 3,678,681.

O'Leary, Walter E.; Thornton, Duane V.; Hammonds, James C.; and Dare, Roy R., to ACF Industries, Incorporated. Method and means for securing lading on railway flat cars. 3,678,866, Cl. 105-369.00a.

Olin Corporation: *See—*
Andrew, Eugene A.; and Halverson, Henry J., 3,679,782.

Olin Mathieson Chemical Corporation: *See—*
Barocca, Aldo J.; and Benedict, Ralph H., 3,678,856.

Olmsted, Dennis R.: *See—*
Herger, Zoltan L.; and Olmsted, Dennis R., 3,679,841.

Olschewski, Karl-Heinz: *See—*
Grimm, Werner; Hasserodt, Ulrich; and Olschewski, Karl-Heinz, 3,679,086.

Olsen, Perry Charles; and Tang, Pak Chong, to RCA Corporation. Video blanking and sound muting circuit employing grounded tuner switches. 3,679,819, Cl. 178-5.80r.

Olsen, Ralph A., to Ford Motor Company. Energy absorbing steering control system. 3,678,777, Cl. 74-492.000.

Olser, Ladislav: *See—*
Bumbalek, Karel; and Olser, Ladislav, 3,678,522.

Olson, Floyd C.: *See—*
Bard, John C.; and Olson, Floyd C., 3,679,434.

Olson, Richard C.: *See—*
Chalfin, Gregory T.; Louapre, Merlin E.; and Olson, Richard C., 3,680,140.

Olson, Theodore A.; and Scanlon, John J., to Remington Arms Company, Inc. Molding plastic coated nitrocellulose. 3,679,781, Cl. 264-3.00r.

Olstein, Myron A.: *See—*
Evans, Robert W.; Grimm, Richard C.; and Olstein, Myron A., 3,678,857.

O'Malley, John J.; and Smith, Marion D., to General Motors Corporation. Power transmission. 3,678,783, Cl. 74-759.000.

Omark Industries, Inc.: *See—*
Hsu, Yung Shing; and Pomeroy, Raymond V., 3,678,808.

Omron Tateisi Electronics Co.: *See—*
Uekusa, Genzo; Tanimura, Shigeru; Higashi, Kazuhiro; and Sumoto, Takao, 3,679,949.

Oppenheimer, Seymour; and Turbak, Albin F., to Tee-Pak, Inc. Preparation of fibrous reinforced sausage-type casings from organic solvent soluble polyvinyl alcohol resins. 3,679,436, Cl. 99-176.000.

Oppenheimer, Seymour; and Turbak, Albin F., to Tee-Pak, Inc. Preparation of fibrous reinforced sausage-type casings from melt-extruded polyvinyl alcohol resins. 3,679,437, Cl. 99-176.000.

Oppolzer, Wolfgang, to Sandoz Ltd., (a.k.a. Sandoz AG). Cis-2-acetyl-1-methyl-1,2,3,3a,4,9b-hexahydro[1] benzopyrano[4,3-c]pyrazole. 3,679,699, Cl. 260-310.00d.

Optical Coating Laboratory, Inc.: *See—*
Apfel, Joseph H.; and Gelber, Robert M., 3,679,291.

Optical Memory Systems, Inc.: *See—*
Maure, Douglas Raymond, 3,680,080.

Organisation Ralfs KG: *See—*
Kretzschmar, Heinz; Chlebus, Rold; and Ochsner, Willi, 3,679,040.

Organon Inc.: *See—*
Bentholm, Svend Asger Rud; and Koenen, Wilhelm Engelinus, 3,679,794.

Original Hanau Quartzlampen, GmbH: *See—*
Friedl, Wolfgang; and Schafer, Volker, 3,679,997.

Orlando, Vincent A.: *See—*
Brooks, Rodney A.; and Orlando, Vincent A., 3,678,763.

Orlov, Evgeny Mikhailovich: *See—*
Rubinshtein, Sholom Yakovlevich; Babin, Mikhail Artemievich; Gutman, Anatoly Lvovich; Naumenko, Viktor Dmitrievich; Orlov, Evgeny Mikhailovich; Presman, Vladimir Alexandrovich; Maev, Veniamin Evnovich; and Bondarenko, Fedor Alexeevich, 3,678,664.

Orlowski, Gerald J., to Korlow Corporation. Onion peeling apparatus. 3,678,976, Cl. 146-43.00r.

Orns, James L., to Clark Equipment Company. Overhead guard for lift truck. 3,679,256, Cl. 296-102.000.

Ortel, William Charles Gormley: *See—*
Biazzo, Martin Robert; King, Bernard George; and Ortel, William Charles Gormley, 3,678,574.

Ortho Pharmaceutical Corporation: *See—*
Shroff, Arvin Pranlal, 3,679,664.

Ortwein, Norman R.: *See—*
Bickel, John E.; Freres, Clemens H.; Gossard, Earl E.; Britt, James E.; Ortwein, Norman R.; and Swanson, Eric R., 3,680,115.

Orwoll, Edward F., to FMC Corporation. Process for purifying triaryl phosphates by reduced pressure distillation and phenol injection. 3,679,550, Cl. 203-38.000.

Osborne, Thomas Lawrence, to Bell Telephone Laboratories, Incorporated. Self-steering array repeater. 3,680,108, Cl. 343-100.0td.

Osovitz, Eugene E.: *See—*
Zysk, Edward D.; and Osovitz, Eugene E., 3,679,491.

Ostertag, Karl; and Nilgens, Heinrich, to Akzona Incorporated. Multistage injector for thread withdrawal. 3,679,114, Cl. 226-97.000.

Ostwald, Fritz; Bender, Alfred; and Nonn, Gerhard, to ITT Industries, Inc. Control valve. 3,678,954, Cl. 137-106.000.

Ota, Katsumi: *See—*
Mori, Chiharu; and Ota, Katsumi, 3,678,826.

Ottavan, Gerald J. Take-up mechanism for paper strip. 3,679,149, Cl. 242-75.500.

Ovshinsky, Stanford R.: *See—*
Feinleib, Julius; Klose, Peter H.; and Ovshinsky, Stanford R., 3,678,852.

Owczarski, William A.: *See—*
Paulonis, Daniel F.; Duvall, David Scott; and Owczarski, William A., 3,678,570.

Owens, Nevyl G., to Schlumberger Technology Corporation. Electrical suspension cable for well tools. 3,679,812, Cl. 174-108.000.

Owens-Corning Fiberglas Corporation: *See—*
Gordon, Jeanne E., 3,679,457.
Marzocchi, Alfred, 3,679,507.

Owens-Illinois, Inc.: *See—*
Graybill, Harold W.; Heider, James E.; and Sponseller, Harold P., 3,679,341.
Mason, Daniel W., 3,679,440.

Oxenham, Ronald B.: *See—*
Franklin, Denis; Gingold, Jerald S.; Oxenham, Ronald B.; and Rogers, Raymond E., 3,680,084.

Packman, Elias W., to Arcadia Products Corporation. Method of stretching leather shoes. 3,679,583, Cl. 252-8.570.

Pako Corporation: *See—*
Reid, Norman C., 3,678,842.

Palencher, Jacques, to Lebocey Industries. Shaping press, specifically for articles made of plastic. 3,679,803, Cl. 425-289.000.

Palmer Filter Equipment Company: *See—*
Stephens, Leonard W., 3,679,031.

Panasewicz, Anton Z., to Dura-Pak, Inc. Bag opening apparatus. 3,678,652, Cl. 53-385.000.

Panitz, Leon J., to Park Planning Inc. Mobile home arrangement. 3,678,639, Cl. 52-79.000.

Paoli, Thomas Lee; and Ripper, Jose Ellis, to Bell Telephone Laboratories, Incorporated. Dynamic AM control of the transverse modes of a self-pulsing semiconductor laser. 3,680,001, Cl. 331-94.00.

Papirnyik, Andrew G., to Singer Company, The. Storage box with interchangeable graphics. 3,679,047, Cl. 206-39.000.

Papst, Hermann Ernst Robert. Piston motor with swash-plate engine assembly. 3,678,807, Cl. 92-70.000.

Paradysz, Louis F.: *See—*
Chen, Philip L.; and Paradysz, Louis F., 3,678,820.

Parikh, Jekishan R.: *See—*
Beaton, John M.; Van Rheenen, Verlan H.; and Parikh, Jekishan R., 3,679,715.

Park Planning Inc.: *See—*
Panitz, Leon J., 3,678,639.

Park, Vernon K.: *See—*
Hagemeyer, Hugh J., Jr.; and Park, Vernon K., 3,679,775.

Park, William R. R.: *See—*
Moore, Eugene R.; and Park, William R. R., 3,679,640.

Parkell, Edward F., to Dart Industries Inc. Apparatus for the transfer of articles. 3,679,041, Cl. 198-24.000.

Parker, Gordon M.; Wismer, Marco; and Hahn, Ernest A., to PPG Industries, Inc. Acryloxy esters of anhydrides. 3,679,731, Cl. 260-475.00p.

Parker-Hannifin Corporation: *See—*
Swindler, Henry A., 3,678,972.

Parrinello, Anthony J.: *See—*
Guthrie, William E.; and Parrinello, Anthony J., 3,679,412.

Partlow, William D.: *See—*
Hopkins, Richard H.; Roland, George W.; Steinbruegge, Kenneth B.; and Partlow, William D., 3,679,597.

Passavant-Werke: *See—*
Schmitt, Walti, 3,679,035.

Passino, Roberto: *See—*
Boari, Gianfranco; Liberti, Lorenzo; Merli, Carlo; and Passino, Roberto, 3,679,580.

Pate, Robert Lee, to McNally Pittsburg Manufacturing Corporation, The. Mechanism for operating thickener rake arms. 3,679,063, Cl. 210-526.000.

Patrick, Ralph E.: *See—*
Kmecak, Ronald A.; Kovach, Stephen M.; and Patrick, Ralph E., 3,679,768.

Patrignani, Theo, to Manufacture des Machines du Haut-Rhin Corporation. Transmission device. 3,678,774, Cl. 74-250.00r.

Pattberg, Georg: *See—*
Neumann, Dietrich; and Pattberg, Georg, 3,680,069.

Patterson, Donald S., to Sargent Industries, Inc. Sealing and wiping means for ball screw actuator. 3,678,776, Cl. 74-459.000.

Patterson, James A.: *See—*
Finkle, Eugene D.; and Patterson, James A., 3,679,205.

Patton, Frank J., Jr.; and Gardner, Danny J. Aerosol can puncher. 3,678,578, Cl. 30-10.000.

Pattore, Vittorio: *See—*
Vecchio, Martino; Cammarata, Italo; and Pattore, Vittorio, 3,679,767.

Paulonis, Daniel F.; Duvall, David Scott; and Owczarski, William A., to United Aircraft Corporation. Diffusion bonding utilizing transient liquid phase. 3,678,570, Cl. 29-498.000.

Paulve, Marcel Luc Amedee. Electromechanical apparatus for checking and signalling the position of a railway-track switch or the like. 3,679,895, Cl. 246-253.000.

Payne, Winslow C.; and Trottier, Gerard M., to Warner & Swasey Company, The, mesne. Co-ordinated periodic lubrication system for machine tools. 3,678,631, Cl. 51-165.770.

Pear, Charles B., Jr.; and Ross, Joseph A., to Potter Instrument Company, Inc. Hammer firing system for a high speed printer. 3,678,847, Cl. 101-93.00c.

Pedersen, Poul K.; Wagstaff, Robert A.; and Waldrop, Thomas W., to Sperry Rand Corporation. Reverse drive for a forage harvester cutting reel. 3,678,772, Cl. 74-220.000.

Peel, Eric: *See—*
Jones, William Dyfrig; and Peel, Eric, 3,679,194.

Pelenc, Yves, to Merlin Gerin Societe Anonyme. Two slot linear induction motor. 3,679,952, Cl. 318-135.000.

Pender, David R. Seat unit for ski lift apparatus. 3,679,258, Cl. 297-195.000.

Penniman, John G., Jr. Edge-inking of shoe soles and coloring of uppers. 3,679,454, Cl. 117-44.000.
Pennwalt Corporation: *See—*
Popoff, Ivan C.; and Williams, Kenneth I. H., 3,679,736.
Penwell, James T. Oil well pump working barrel. 3,678,811, Cl. 92-169.000.
Peranio, Anthony: *See—*
Amir, Ilan; and Peranio, Anthony, 3,678,754.
Perez, Damaso Rodolfo Adelto. Screen filter pack and method for making same. 3,679,057, Cl. 210-223.000.
Perina, Joseph, to American Velcro, Inc. Attachment device of hook and loop fasteners. 3,679,530, Cl. 161-48.000.
Perkins Engines Limited: *See—*
Vulliamy, Nicholas Martin F., 3,678,914.
Perkinson, Leon A.: *See—*
Moore, Francis C.; and Perkinson, Leon A., 3,678,933.
Perkow, Werner: *See—*
Haberland, Erich, and; and Perkow, Werner, 3,679,359.
Perlman, David E., to Detection Systems, Inc. Parametric integrator for condition-responsive systems. 3,680,047, Cl. 340-258.00b.
Perrine, Walter E. Lifting yoke. 3,679,107, Cl. 224-5.00p.
Perronnet, Jacques: *See—*
Bertin, Daniel; and Perronnet, Jacques, 3,679,393.
Perry, Ernest John: *See—*
Hollister, Kenneth robert; and Perry, Ernest John, 3,679,425.
Peter, Lothar: *See—*
Peter, Oskar E.; and Peter, Lothar, 3,679,247.
Peter, Oskar E.: *See—*
Peter, Oskar E.; and Peter, Lothar, 3,679,247.
Peter, Oskar E.; and Peter, Lothar, to Peter, Oskar E. Hub-to-shaft clamp connection assembly. 3,679,247, Cl. 287-52.060.
Peters, Riener: *See—*
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Peterson, Edward C.: *See—*
Blatchford, John K.; Peterson, Edward C.; and Burda, Jan C., 3,679,473.
Peterson, Laurence I., to Dow Chemical Company, The. Oxidation of phenylacetonitrile derivatives employing a copper(II)-amine catalyst system. 3,679,671, Cl. 260-240.00d.
Peterson, Richard J.: *See—*
Mosier, John L.; and Peterson, Richard J., 3,680,032.
Peterson, William H., to Pullman Incorporated. Cushioning arrangement for railway car. 3,679,068, Cl. 213-8.000.
Pey, Walter Arnold, to Welwyn Electric Limited. Film attenuator. 3,680,013, Cl. 333-81.00r.
Pfefferle, William C.: *See—*
Dalson, Milton H.; Gallagher, James P.; Keith, Carl D.; and Pfefferle, William C., 3,679,578.
Pfizer Inc.: *See—*
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Pfizer Inc.: *See—*
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Dominy, Beryl William, 3,679,679.
Philadelphia Manufacturing Company, Inc.: *See—*
Startzman, Paul E., 3,679,113.
Philadelphia Quartz Company: *See—*
Sams, Robert H.; Linton, Robert W.; and Horikawa, Noboru R., 3,679,610.
Philips, Charles M.; and Sanmarco, Miguel E., to Temple University. Dilution method and apparatus for measurement of fluid flow rate. 3,678,922, Cl. 128-2.05f.
Phillips Fibers Corporation: *See—*
Van Doornewaard, Hans; and Jackson, Henry G., 3,679,786.
Phillips Petroleum Company: *See—*
Bowman, Mark M., Jr., 3,679,466.
Goldsmith, Clifton R., 3,679,599.
Hinton, Robert A.; and Cottle, John E., 3,679,764.
Houston, William L., Jr.; and Clark, William C., 3,679,765.
Hutson, Thomas, Jr.; and Carter, Cecil O., 3,679,771.
Newton, Richard C., 3,678,547.
Nolan, George J.; and Holm, Vernon C. F., 3,679,601.
Quiles, Francisco K., 3,678,598.
Pic Design Corporation: *See—*
Wertman, Louis, 3,679,809.
Picard, Karl-Heinz; and Beierer, Joachim, to Siemens Aktiengesellschaft. Hydraulic drive for electric switches. 3,679,909, Cl. 307-144.000.
Pid Corporation: *See—*
Leach, Sam L., 3,678,833.
Pierce, Boyd J., Jr. Universal four barrel carburetor adapter. 3,678,962, Cl. 138-39.000.
Pierce, Larry J., to Trane Company, The. Heat exchange coil and housing therefor. 3,678,993, Cl. 165-76.000.
Pietroski, Alex J., to General Motors Corporation. Blending device. 3,678,551, Cl. 29-78.000.
Pietsch, Peter: *See—*
Leuschner, Gerhard; Pietsch, Peter; and Kadner, Gunter, 3,678,648.
Pihl, George E., to Miniature Electronic Components Corporation. Three position electromagnetic indicator. 3,680,083, Cl. 340-373.00r.
Pilkington Brothers Limited: *See—*
Giddings, David George; and Murphy, David Duncan, 3,679,388.
Pinard, Emile Jean Lucien, to Societe des Accumulateurs Fixes et de Traction. Process of manufacturing sintered carrier type negative electrodes for alkaline storage cells. 3,679,481, Cl. 136-24.000.
Pinnell, Martin C.: *See—*
Arulpragasam, Jeganandaraj A.; Binks, Dennis C.; Holmes, John J.; Minshull, John F.; Pinnell, Martin C.; and Williams, Clive, 3,680,052.
Pinnow, Roy Lee: *See—*
Giesfeldt, William Otto; and Pinnow, Roy Lee, 3,678,569.
Pinto, James J., to Bissett-Berman Corporation, The. Automatic data readout. 3,680,063, Cl. 340-173.0ch.
Pioneer Liquor Company, Inc.: *See—*
McKinney, Merle B., 3,679,225.
Pioneer Magnetics, Inc.: *See—*
Wilkinson, Bruce L., 3,679,965.
Pistilli, Donald J.; and Degginger, Edward R., to Allied Chemical Corporation. Method for perfecting aircraft emergency landing. 3,679,462, Cl. 117-105.500.
Pitney-Bowes, Inc.: *See—*
Du Bois, Robert Clark; and Miller, Wayne H., 3,679,306.
Murphy, James P., 3,679,932.
Nagot, Marc N.; and Zucker, Fredric E., 3,679,449.
Tramposch, Herbert, 3,679,448.
Zucker, Fredric E., 3,680,082.
Pizzey, Peter Ernest, to Thomas, Frederick, & Company Limited. Lighting unit. 3,679,886, Cl. 240-3.
Plastics Development Corporation of America: *See—*
Michaelis, David E., 3,678,839.
Platzek, Richard C.: *See—*
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Plenier, Alain: *See—*
Chakraverty, Benoy Kumar; and Plenier, Alain, 3,679,947.
Plessey BTR Limited: *See—*
Cotton, John Michael; and Lloyd, Peter Anthony, 3,680,053.
Plovan, Steven G.: *See—*
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Pohlemann, Heinz; and Wurmb, Rolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of esters of omega-hydroxyalkanesulfonic acids with alkenoic acids. 3,679,737, Cl. 260-486.00r.
Poinsard, Henri, to Thomson-CSF. Receivers for angular measurement systems, in particular to radar system receivers. 3,680,102, Cl. 343-16.00m.
Pointud, Jacky: *See—*
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Polaroid Corporation: *See—*
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Knight, Frank W.; and Van Allen, David, 3,679,417.
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Poli, David L. Container apparatus. 3,679,087, Cl. 220-18.000.
Politeknichesky Institut imeni Sergo Ordzhonikidze: *See—*
Ulyanitsky, Evgeny Mefodievich; and Podgorny, Eduard Vasilievich, 3,679,937.
Pollet, Robert Joseph; and Vandenberghe, Antoon Leon, to Gevaert-AGFA N.V. Silver halide emulsion containing acetylene dicarboxylic acid anions antifoggant. 3,679,423, Cl. 96-109.000.
Pollitzer, Ernest L., to Universal Oil Products Company. Hydrocarbon isomerization process. 3,679,602, Cl. 252-442.
Pollock, Andre W., to Sun Oil Company. Houdriflow cracking process. 3,679,563, Cl. 208-166.000.
Pollution Control Products, Inc.: *See—*
Koulovatos, James; and Thomas, Kenneth L., 3,679,053.
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Clark, Timothy M.; Shanfield, Henry; and Grunau, David L., 3,679,055.
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Sorell, Henry P.; Pomazak, Eugene; and Rygg, Sven, 3,679,458.
Pomeranz, Yeshajahu; and Finney, Karl F., to United States of America, Agriculture. Protein-enriched baked products and method of making same. 3,679,433, Cl. 99-90.0hp.
Pomeroy, Raymond V.: *See—*
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Ponting, Ivor, to Electrical Remote Control Company Limited. Cam assembly. 3,678,780, Cl. 74-568.00r.
Pool, Clarence. Light with universally mounted axis for body panels and the like. 3,679,890, Cl. 240-41.600.
Popek, Stephen: *See—*
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Popoff, Ivan C.; and Williams, Kenneth I. H., to Pennwalt Corporation. Dinitrophenylcarbamates. 3,679,736, Cl. 260-479.00c.

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Porterfield, Jay G.: *See—*
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Portus, Bruce W., to Fiber Industries, Inc. Operation of polyamide continuous polymerization system. 3,679,635, Cl. 260-78.00r.

Potter Instrument Company, Inc.: *See—*
Pear, Charles B., Jr.; and Ross, Joseph A., 3,678,847.

Poulsen, Peder Ulrik. Driven mandrel rotatable about its longitudinal axis. 3,679,521, Cl. 156-429.000.

Poussin, Antoine, to Thomson-CSF. Wide-band frequency-converting and amplifying circuits. 3,680,004, Cl. 332-19.000.

Powell, B. J.: *See—*
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Powell, John M.; and Frazier, Lauren L., to General Electric Company. Ice maker. 3,678,701, Cl. 62-353.000.

Powell, Russell A., to Koppers Company, Inc. Furnace top charging devices. 3,679,192, Cl. 266-27.000.

Powell, Walter F., to General Electric Company. Apparatus for operating electric discharge lamps and auxiliary lighting lamps. 3,679,931, Cl. 315-92.000.

Power Drive Corporation: *See—*
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Power Flo Products Incorporated: *See—*
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Praddaude, Pierre A., to Societe Anonyme Poclain. Method for regulating the lifting of an arm articulated on a structure and lifting apparatus for carrying out this method. 3,679,179, Cl. 254-93.00r.

Pratt, Jeofry Stuart Courtney, to Bell Telephone Laboratories, Incorporated. Method and medium for producing color images. 3,679,818, Cl. 178-5.4cd.

Presman, Vladimir Alexandrovich: *See—*
Rubinshtein, Sholom Yakovlevich; Babin, Mikhail Artemievich; Gutman, Anatoly Lvovich; Naumenko, Viktor Dmitrievich; Orlov, Evgeny Mikhailovich; Presman, Vladimir Alexandrovich; Maev, Veniamin Evnovich; and Bondarenko, Fedor Alexeevich, 3,678,664.

Prete, Ernest Jr., to Ancra Corporation. Cam buckle. 3,678,542, Cl. 24-191.000.

Preusser, Gerhard; Schulze, Martin; and Richter, Klaus, to Heinrich Koppers Gesellschaft mit beschrankter. Process for recovering highly pure aromatic substances from hydrocarbon mixtures containing both aromatic and non-aromatic substances. 3,679,579, Cl. 208-323.000.

Prevot Stephane: *See—*
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Price, Warren H.: *See—*
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Primessing, Franz: *See—*
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Pringle, William L., to Pullman Incorporated. Articulated railway car. 3,678,863, Cl. 105-4.00r.

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Prochazka, Miloslav; Seidl, Karel; and Cesenek, Bedrich, to Elitex, Zavody textilniho strojirenstvi. Device for the mass spinning-in of spinning units in spindleless spinning machines. 3,678,673, Cl. 57-58.950.

Procter & Gamble Company, The: *See—*
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Provinsky, Jerry: *See—*
Chow, Weichien; and Provinsky, Jerry, 3,680,034.

Prusinski, Richard C.; Fermani, Marcello; Torcolacci, Attilio; and Fermani, Luigi, to Architectural Research Corporation. Panel construction. 3,679,529, Cl. 161-44.000.

Pryor, Edward, Developments Limited: *See—*
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Pullman Incorporated: *See—*
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Peterson, William H., 3,679,068.
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Puopolo, Vito. Music slide rule. 3,678,796, Cl. 84-471.000.

Purdue Research Foundation: *See—*
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Pusch, Dietrich, to Continental Gummi-Werke Aktiengesellschaft. Elastic bearing for motor suspension of motor vehicles. 3,679,158, Cl. 248-10.000.

Putch, Samuel W., to FMC Corporation. Seat mechanism for through bore well heads. 3,679,238, Cl. 285-144.000.

Pylaikin, Petr Alexeevich: *See—*
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Quiles, Francisco K., to Phillips Petroleum Company. Dual-drum dryer. 3,678,598, Cl. 34-128.000.

Quine, John P., to General Electric Company. Microstrip microwave oscillators. 3,680,002, Cl. 331-96.000.

Racz, William B.: *See—*
Stapfer, Christian H.; and Racz, William B., 3,679,619.

Rademacher, Paul; and Hulland, Burton L., to Dynell Electronics Corporation. Method and apparatus for signal detection. 3,680,116, Cl. 343-105.000.

Ragsdale, Harold E., to Bechtel International Corporation. Method and apparatus for pumping slugs of coal slurry without passing slurry through the pumping station. 3,678,950, Cl. 137-1.000.

Rahn, Horst, to Kienzle Apparate GmbH. Housing arrangement for an apparatus transforming rotary speed into electric signals. 3,679,922, Cl. 310-89.000.

Ralston Purina Company: *See—*
Mohrman, Robert K.; Kifer, Paul E.; and Oborsh, Edward V., 3,679,429.

Ramanathan, Visvanathan: *See—*
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Rambacher, Paul; and Make, Siegfried. L-and DL-2-guanidino-1,3-thiazoline carboxylic acid-4 and method of making same. 3,679,694, Cl. 260-299.000.

Ramsey Controls, Inc.: *See—*
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Randall, Davis I.; and Wynn, Robert W., to GAF Corporation. N-Substituted-P-(2-chloroethyl)-phosphonamidates. 3,679,780, Cl. 260-959.000.

Rangger, Herbert: *See—*
Maier, Elmar; and Rangger, Herbert, 3,679,118.

Rankin, John C. Loudspeaker enclosure. 3,679,023, Cl. 181-31.00a.

Rao, Vemulapalli D.; Telang, Yeshwant P.; and White, Jerry E., to Ford Motor Company. Bearing member for high temperature applications. 3,679,459, Cl. 117-69.000.

Raquin, Roger: *See—*
Largeron, Louis; and Raquin, Roger, 3,678,548.

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Rasseikin, Mikhail Grigorievich: *See—*
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Ratcliffe, Temple W., to Babcock & Wilcox Company, The. Nozzle arrangement for molten metal container vessel. 3,679,105, Cl. 222-567.000.

Ratouis, Roger; and Boissier, Jacques Robert, to Roussel-UCLAF. Methods of preventing convulsions. 3,679,802, Cl. 424-285.000.

Rauffer, Walter, to AGFA-Gevaert A.G. Double sheet detecting and locking arrangement. 3,679,202, Cl. 271-57.000.

Rawson, Edward B.; and Dowling, John B., to Searle Medidata Inc. Medical test data entry terminal. 3,679,875, Cl. 235-61.70r.

Ray, Donald A.; and Arnold, Richard E., to Eastman Kodak Company. Washout-preservative for lithographic printing plates. 3,679,479, Cl. 134-40.000.

Ray, Royce W.: *See—*
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Keneman, Scott Allen; and Miller, Arthur, 3,680,060.
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Thall, Earle Solomon, 3,679,284.
Thibodeau, Gregg Joseph, 3,679,989.
Reade, Grahame Melvin, to Imperial Chemical Industries Limited. Process for shrinking film. 3,679,791, Cl. 264-342.0re.
Reams, Robert M. Horticultural method for giving seeds, plants and harvested items hygroscopic character during arid conditions. 3,678,621, Cl. 47-58.000.
Rebechini, Eugene J.: *See—*
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Reddy, Robert R. Releasable shaft lock. 3,679,244, Cl. 287-20.00r.
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Redlich, Robert W. Colinear antenna apparatus. 3,680,147, Cl. 343-792.000.
Redmond, William G., to LTV Electrosystems, Inc. Multiple servomotors actuator. 3,679,956, Cl. 318-564.000.
Redmond, William G., Jr., to LTV Electrosystems, Inc. Fly-by-wire. 3,679,156, Cl. 244-77.00r.
Reeves, Harold C., to Portage Machine Company, mesne. Quick change tool holder. 3,679,220, Cl. 279-1.00b.
Regents, New Mexico Institute of Mining and Technology: *See—*
O'Connor, Lawrence T.; Brierley, James A.; and Bhappu, Roshan B., 3,679,397.
Rehfeldt, Dietrich: *See—*
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Reiback, Earl M. Variable light projection apparatus. 3,679,888, Cl. 240-10.100.
Reich, Ismar M., to Chock Full-O-Nuts Corporation. Agglomeration of powdered coffee. 3,679,416, Cl. 99-71.000.
Reichhold Chemicals, Inc.: *See—*
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Reid, Edwin Durham, to Union Carbide Corporation. Composite wear resistant material and method of making same. 3,679,460, Cl. 117-93.1pf.
Reid, Norman C., to Pako Corporation. Method and apparatus for processing photographic prints. 3,678,842, Cl. 95-94.00r.
Reifschneider, Walter, to Dow Chemical Company, The. Carbamic acid esters. 3,679,735, Cl. 260-479.00c.
Remington Arms Company, Inc.: *See—*
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Renard, Guy: *See—*
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Renaut, Henry. Apparatus for pressing and heating textile articles. 3,678,606, Cl. 38-22.000.
Rendel, Inc.: *See—*
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Renz, Werner: *See—*
Schuierer, Erich; Renz, Werner; and Sommer, Hans, 3,679,634.
Repko, Louis L.; and Ronzi, Richard C., to Ford Motor Company. Damped valve train system. 3,678,906, Cl. 123-90.470.
Reth, Johannes A.; and Fettweis, Winifried H., to Demag Elektrometallurgie GmbH. Electric reduction furnace. 3,679,806, Cl. 13-9.000.
Reti, Adrian R.: *See—*
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Reynoir, Diane Greenslit; and Delesdernier, Penelope Brodtmann, to Rendel, Inc. Device for holding modern attractive hairdos. 3,678,945, Cl. 132-46.00r.
Reynolds, Arthur T., Jr., to Westinghouse Electric Corporation. Common antenna aperture having polarization diversity. 3,680,139, Cl. 343-756.000.
Rhoades, John M., to General Electric Company. Control system for compensating for dimensional errors due to cutting tool wear in an automatic machine tool. 3,679,955, Cl. 318-572.000.
Rhodes, Philip L.; and Brown, Roger S., to United States of America, Agriculture. Card cover with fiber conveying air-flow channel. 3,678,537, Cl. 19-98.000.
Rhone-Poulenc S.A.: *See—*
Bargain, Michel; Gruffaz, Max; Laurent, Serge; and Mallet, Maurice, 3,679,639.
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Bassett, Kirk W.; and Ford, Frank P., 3,679,524.
Rice, Harold D. Line transfer apparatus. 3,679,151, Cl. 242-85.000.
Rich, Joseph A., to General Electric Company. Periodic electrode structure for vacuum gap devices. 3,679,474, Cl. 313-217.000.
Richard, David J., to United States of America, Air Force. Tunable omidirectional antenna. 3,680,127, Cl. 343-108.000.
Richards, Philip C., to Bell Telephone Laboratories, Incorporated. Numerical conversion. 3,680,081, Cl. 340-347.0dd.
Richardson, Stephen M.; and Grenda, Edward P. Combination card hold down and audible indicator-keytape. 3,678,880, Cl. 116-67.000.
Richmond, Albert R., to Richmond Manufacturing Company, The. Power train for horizontal earth boring machine. 3,679,006, Cl. 173-152.000.
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Riedhammer, Josepf; and Glaser, Fritz-Jorg, to Bruninghans Hydraulik GmbH. Hydraulically regulated drive. 3,679,327, Cl. 417-222.000.
Riegel Paper Corporation: *See—*
Conley, Kenneth E.; and Ellison, Thomas M., 3,679,510.
Ries, Gotfried. Device for automatically cleaning vehicles. 3,678,527, Cl. 15-99.000.
Riley, Raymond A., to Dunlop Company Limited, The. Machine tools. 3,678,790, Cl. 82-38.000.
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RMI Company, mesne: *See—*
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Robbins, Carl L., to Mead Johnson and Company. Dispensing and recording container. 3,678,884, Cl. 116-121.000.
Roberts, John A.; and King, Alwyn H., to Brunswick Corporation. Method of producing high resolution images and structure for use therein. 3,678,564, Cl. 29-419.000.
Roberts, Richard A.; and Jones, John R., to United States of America, Navy. Aircrew recovery system. 3,679,157, Cl. 244-141.000.
Roberts, William E.; and Barry, Gerald J., to United States of America, Navy. Tape recorder. 3,679,215, Cl. 274-4.00d.
Robertshaw Controls Company: *See—*
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Rockwell Manufacturing Company: *See—*
Hedges, Robert H., 3,678,948.
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Roe, Leslie A. Suspension system for vehicles. 3,679,017, Cl. 180-73.0tl.
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Rogers, Raymond E.: *See—*
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Rohner, Dieter; and Duhring, Wolfgang, to Akzona Incorporated. Method and apparatus for measuring yarn tension. 3,679,808, Cl. 73-144.000.
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Roper, Hans-Joachim: *See—*
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Ropp, Richard C., to Westinghouse Electric Corporation. Process for coating lehring-sensitive phosphor onto lamp envelope. 3,679,452, Cl. 117-33.500.
Rosch, Gunter: *See—*
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Rose, Ronald N. Electrostatic precipitator cell for desk or tabletop air purifier. 3,678,655, Cl. 55-128.000.
Rosen, Harold A.: *See—*
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Rosenberg, Karl M., to Flo-Tech Corporation, mesne. Coating apparatus, 3,678,891, Cl. 118-402.000.
Rosenberg, Karl M., to Flo-Tech Corporation. Method of making decorative articles from plastisol. 3,679,784, Cl. 264-73.000.
Rosenberg, Robert, to Bell Telephone Laboratories, Incorporated. Dispersive element for optical pulse compression. 3,679,313, Cl. 356-112.000.
Roser, Gerhard K.; Rebechini, Eugene J.; and Vosburg, Guy M., to Weber Marking Systems, Inc. Inking pad and use thereof. 3,678,848, Cl. 101-125.000.
Ross, Joseph A.: *See—*
Pear, Charles B., Jr.; and Ross, Joseph A., 3,678,847.
Ross, Stephen T.; and Zirkle, Charles L., to Smith Kline & French Laboratories. N-pyridylalkyl-β-alkoxy-β-trifluoromethyl-phenalkylamines. 3,679,693, Cl. 260-296.0ae.
Ross-Clunis, Robert Alan. Self-steering arrangement. 3,678,878, Cl. 114-144.00r.
Roth, David W. H., Jr.: *See—*
Balint, Laszlo J.; Roth, David W. H., Jr.; and Snider, Orvill E., 3,679,368.
Roth, Howard: *See—*
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Roth, Lawrence O.: *See—*
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Rothwell, Ronald E.; and Beringer, Charles W., to Allied Chemical Corporation. Heat setting trapped pre-inserted twist. 3,678,676, Cl. 57-157.0ts.
Roussel-UCLAF: *See—*
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Royer, Clady J. Elastomeric spring bumper. 3,679,196, Cl. 267-140.000.
Rubin, Bernard; and Childress, James D., to United States of America, National Aeronautics and Space Administration. Process for the preparation of brushite crystals. 3,679,360, Cl. 23-109.000.
Rubin, Marion Sturm. Pre-wrapped box. 3,679,120, Cl. 229-23.0bt.
Rubinshtein, Sholom Yakovlevich; Babin, Mikhail Artemievich; Gutman, Anatoly Lvovich; Naumenko, Viktor Dmitrievich; Orlov, Evgeny Mikhailovich; Presman, Vladimir Alexandrovich; Maev, Veniamin Evnovich; and Bondarenko, Fedor Alexeevich. Inertia-type air cleaner. 3,678,664, Cl. 55-449.000.
Ruggen, Werner: *See—*
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Rummel, Samuel L., to Garrett Corporation, The. Inflatable slide and raft apparatus. 3,679,025, Cl. 182-20.000.
Rusco Industries, Incorporated: *See—*
Hicks, Glen Elton, 3,678,651.
Rush, C. J., Limited: *See—*
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Russell, Stanley L.: *See—*
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Ruth, Arthur P. Timed animal feeder. 3,678,902, Cl. 119-51.110.
Rutherford, Kenneth R.; and Strebe, Arthur C., to Collins Radio Company. Pulse train framing and intermediate pulse spacing accuracy test circuit. 3,680,091, Cl. 343-6.500r.
Ruti Machinery Works, Ltd.: *See—*
Strauss, Edgar H., 3,678,966.
Rutt, Truman C., to NL Industries, Inc. Ceramic capacitors. 3,679,950, Cl. 317-258.000.
Ryan, Richard P., Jr.: *See—*
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Safrit, Sam C., to Hanes Corporation. Combination garments and method of making same. 3,678,514, Cl. 2-212.000.
Saito, Toshiaki; and Oki, Toshihiko, to Kabushiki Kaisha Suwa Seikosha. Mechanically switched electric timepiece. 3,678,681, Cl. 58-28.00a.
Sakai, Koichi. Portable baby carriage. 3,679,223, Cl. 280-37.000.
Sakamoto, Hiroshi: *See—*
Yoshimura, Ippei; Fukue, Norihiko; Sakamoto, Hiroshi; Murofushi, Hisashi; Hiyama, Takami; and Matsunaga, Takao, 3,679,707.
Salcedo, Guido; and Graves, Jimmy J.; deceased (by Graves, Marlene D.; heir), to Echo Science Corporation, mesne. Video tape scanner with adjustably mounted transducers providing chordal adjustment. 3,679,838, Cl. 179-100.2ca.
Salners, Edward A.: *See—*
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Samoel, Alain: *See—*
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Sanders, Duane V., to Systematic Multi-Level Parking Company. Apparatus for transferring a vehicle to and from an elevator. 3,679,083, Cl. 214-730.000.
Sanders, Lon L., to International Telephone and Telegraph Corporation. Aircraft electronic landing responser system using airborne chirp interrogation. 3,680,089, Cl. 343-6.50r.
Sandler, Stanley Robert, to Borden Inc. Preparation of N-vinyl carbazole. 3,679,700, Cl. 260-315.000.
Sandor, Bela: *See—*
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Sanford, Robert A.; Mooi, John; and Rogers, Edward S., to Sinclair Research, Inc. Extruded alumina catalyst support and the preparation thereof. 3,679,605, Cl. 252-463.000.
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Sato, Takayoshi, to Kabushikikaisha Copal. Electronic shutter for through-the-lens camera having interchangeable lenses of differing aperture. 3,678,823, Cl. 95-10.0ct.
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Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.
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Scarnato, Thomas J.; Dryan, James J.; Lawler, Craig M.; and Sorensen, Robert, to International Harvester Company. Flail shredder. 3,678,671, Cl. 56-505.000.
Schaap, Luke A.; and Den Herder, Marvin J., to Standard Oil Company (Indiana). Hydraulic fluids. 3,679,588, Cl. 252-75.000.
Schafer, Volker: *See—*
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Schaffer, Richard H.: *See—*
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Schembs, Wolfgang, to Siemens Aktiengesellschaft. Method of producing electronic planar-type devices applicable for high frequency germanium planar transistors. 3,679,495, Cl. 148-179.000.
Schiffmann, Robert F.; Roth, Howard; Lipka, David H.; and Goodman, Abraham H., to DCA Food Industries Inc. Method of producing cooked products. 3,679,432, Cl. 99-86.000.
Schile, Richard D.: *See—*
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Schmenzfeier, Otto K, to Shell Oil Company. Hydraulic sonic oscillator. 3,678,803, Cl. 91-39.000.
Schmerling, Louis, to Universal Oil Products Company. Preparation of primary alkyl halides. 3,679,759, Cl. 260-663.000.
Schmerling, Louis, to Universal Oil Products Company. Preparation of diarylalkanes. 3,679,760, Cl. 260-668.00c.
Schmid, Adolf; and Kuhni, Rudolf, to Martini-Buchbindereimaschinenfabrik AG. Book sheet testing apparatus. 3,678,740, Cl. 73-93.000.
Schmidt, Karl-Julius: *See—*
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Schmidt, Kranz & Co., GmbH: *See—*
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Schmidt, Warren E., to Lord Corporation. Compressive load carrying bearings. 3,679,197, Cl. 267-152.000.
Schmitt, Bertrand: *See—*
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Schmitt, Joseph R., to McDonald, A. Y., Mfg. Co. Compression coupling for plastic pipe. 3,679,239, Cl. 285-176.000.
Schmitt, Walti, to Passavant-Werke. Bearing and drive means for large size revolving drums. 3,679,035, Cl. 192-129.00a.
Schneeberger, Richard F., to Cornell Aeronautical Laboratory, Inc. Rotating cup particle sizing sampling apparatus. 3,678,759, Cl. 73-432.0ps.
Schnegelberger, Harald; and Altenschopfer, Theodor, to Henkel & Cie G.m.b.H. Low-foaming rinsing, washing and cleaning compositions. 3,679,589, Cl. 252-102.000.
Schneider, Abraham, to Sun Oil Company. Dihalogenation of branched alkanes. 3,679,758, Cl. 260-659.00r.
Schneider, Harald; and Wicha, Cornel, to Karl Mayer Textilmaschinenfabrik GmbH. Guide bar shogging mechanism for a warp knitting machine. 3,678,711, Cl. 66-86.000.
Schneider, Herbert Anton, to Bell Telephone Laboratories, Incorporated. Regenerative circuit comprising complementary transistor pairs. 3,679,914, Cl. 307-288.000.
Schneider, Jurg A.: *See—*
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Schneyour, Amir; and Avron, Mordhay. Process for the disrupting of biological material. 3,679,139, Cl. 241-2.000.
Schoenbrunn, Erwin Frederick, to American Cyanamid Company. Hydration of acrylonitrile. 3,679,745, Cl. 260-561.00n.
Schoffmann, Rudolf, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Method for the production of sheets. 3,678,571, Cl. 29-527.600.
Scholl, Hermann; Norbert, Stuttgart; Gansert, Willi; and Arnold, Herbert, to Bosch, Robert, G.m.b.H. Electrically controlled fuel injection arrangements. 3,678,904, Cl. 123-32.0ea.
Scholz, Donald T., to Scholz Homes, Inc. Method and apparatus for setting a prefabricated building section. 3,679,177, Cl. 254-89.00r.
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Schomburg, Noel L., to Monsanto Company. Cleansing and soil preventive composition. 3,679,592, Cl. 252-153.000.
Schon, Franz: *See—*
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Schott, Herbert; and Herwig, Walter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the precipitation polymerization of α-methylstyrenes which may be substituted. 3,679,650, Cl. 260-93.50s.
Schouw, Arthur C. Primary collector and manifold. 3,678,659, Cl. 55-238.000.
Schroeder, Manfred Robert, to Bell Telephone Laboratories, Incorporated. Transform coding of image difference signals. 3,679,821, Cl. 178-6.000.
Schuck, James M.; and Wildi, Bernard S., to Monsanto Company. Hormonally-active reaction product of a polymer with a hormone. 3,679,653, Cl. 260-112.500.
Schuierer, Erich; Renz, Werner; and Sommer, Hans, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Polymers of fluorinated ethylene imines and their use for textile finish. 3,679,634, Cl. 260-77.50b.
Schulten, Reinhard; and Michel, Hartmut, to Bosch, Robert, G.m.b.H. Apparatus for etching semiconductor bodies. 3,679,517, Cl. 156-345.000.
Schulz, Gerhard; and Matthias, Guenther, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of esters of acetic acid. 3,679,739, Cl. 260-488.00f.
Schulze, Martin: *See—*
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Schumacher, Walter C., to General Electric Company. Grounding device for mounting strap. 3,680,031, Cl. 339-14.00r.
Schutze, Rainer. Mounting for a plurality of plectrums. 3,678,793, Cl. 84-258.000.
Schuyler Development Corporation: *See—*
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Schwartz, Boris. Intermixing syringe. 3,678,930, Cl. 128-218.00m.
Schwartz, Stephan Lars: *See—*
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Schwarz, Alfred V. Plastic sheets for concrete reinforcing mesh. 3,678,643, Cl. 52-686.000.
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Scott, Douglas R., to Robertshaw Controls Company. Pneumatic control system and parts therefor or the like. 3,679,330, Cl. 417-306.000.
Scott, Gerald C., to Ford Motor Company. Ranging system using phase detection. 3,680,092, Cl. 343-7.00a.
Scott, Harley D., to Smith, Elwin G., & Company, Inc. Insulated wall panel. 3,678,642, Cl. 52-588.000.
Scott, Harry B.: *See—*
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Searle, Simon M. St. L.; and Walker, Christopher H. C., to Smiths Industries Limited. Display systems. 3,679,297, Cl. 353-14.000.
Seckerson, Clifford A., to TRW Inc., mesne. Fastener. 3,678,797, Cl. 85-5.00r.
Segawa, Hiroyuki: *See—*
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Seidel, Alex; Moller, Tilo; and Weldle, Helmut, to Heckler & Roch GmbH, Firma. Self-loading pistol with cocking trigger. 3,678,800, Cl. 89-147.000.
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Seki, Koichi: *See—*

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Seki, Susumu; Noumi, Makoto; and Takaoka, Tadashi, to Hitachi, Ltd. System for generating speed pattern for speed control of moving body. 3,679,879, Cl. 235-150.310.
Sekido, Satoshi; and Arita, Tomohiko, to Matsushita Electric Industrial Co., Ltd. Electric quantity memory element. 3,679,945, Cl. 317-231.000.
Sekisu Kagaku Kogyo Kabushiki Kaisha: *See*—
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Selig, Stanley A., Jr. Sailing conditions indicator for sailboats. 3,678,591, Cl. 33-222.00r.
Selley, Wilbur-Webb; and Schaffer, Richard H., to Vactronics, Inc. Movable light arrangement. 3,679,885, Cl. 240-2.0vc.
Semel, Bernard J. Practical joke smoke balls or like devices and method of making same. 3,678,855, Cl. 102-37.200.
Senft, Stephen P., to General Electric Company. Manufacture of interior coated bulbs for high temperature glass lamps. 3,679,385, Cl. 65-60.000.
Seragnoli, Ariosto, to G. D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Serganoli. Apparatus for feeding cigarette containers to the hopper loading mechanism of a cigarette packaging-conditioning machine. 3,679,079, Cl. 214-302.000.
Settimi, Raymond J. Restraint apparatus. 3,679,228, Cl. 280-150.0sb.
Sezzi, Franco: *See*—
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Shah, Girish Chandulal; and Shroff, Mahesh Shantilal, to American Cyanamid Company. Method for making porous fibrous sheets containing polytetrafluoroethylene. 3,679,614, Cl. 260-2.50m.
Shah, Jagdeep Chandravadan: *See*—
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Shaver, William R.; and Knippel, Willis H., to Pullman Incorporated. Flexible boot type hydraulic cushioning unit with boot protector. 3,679,069, Cl. 213-43.000.
Shearer, Jack F., to Hubbell, Harvey, Incorporated, mesne. Disposable reflectors for lighting fixtures. 3,679,892, Cl. 240-103.000.
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Shiari, Yoshimichi; and Komori, Toshimi, to Nippon Denso Kabushiki Kaisha. Ignition coil for internal combustion engine. 3,680,017, Cl. 336-213.000.
Shiba, Keisuke; Tsubota, Motohiko; Sato, Akira; Ikeda, Tadashi; and Ogawa, Akira, to Fuji Photo Film Co., Ltd. Spectrally sensitized photographic emulsions. 3,679,428, Cl. 96-124.000.
Shibuya, Yoshikazu: *See*—
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Shohet, Herbert N.; Magri, Joseph L.; and Primachuk, Edward R., to United Aircraft Corporation. Convertible composite engine. 3,678,690, Cl. 60-226.000.
Shohet, Herbert N.; and Magri, Joseph L., to United Aircraft Corporation. Convertible composite engine control. 3,678,691, Cl. 60-239.000.
Short, Oliver Alton, to Du Pont de Nemours, E. I., and Company. Thermistor compositions and thermistors made therefrom. 3,679,606, Cl. 252-514.000.
Shriver, Joe E., to Sperry Rand Corporation. Control for a differentially steered vehicle. 3,679,015, Cl. 180-6.200.
Shroff, Arvin Pranlal, to Ortho Pharmaceutical Corporation. 3-Aza-A-homo-steroids. 3,679,664, Cl. 260-239.30p.
Shroff, Mahesh Shantilal: *See*—
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Siegler, Manny: *See*—
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Schembs, Wolfgang, 3,679,495.
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Siemens-Schuckertwerke Aktiengesellschaft: *See*—
Oesterhelt, Gerhard; and De Bucs, Eugen Szabo, 3,678,986.
Signode Corporation: *See*—
Frey, Robert J., 3,679,519.
Silverman, Daniel; and Treitel, Sven, to Amoco Production Company. Method and apparatus for the analysis of seismic records. 3,680,040, Cl. 340-15.50r.
Simmonds, Leonard B.; and Botts, John C., to Westinghouse Electric Corporation. Dynamoelectric machine with improved side fillers for coil retention. 3,679,926, Cl. 310-214.000.
Simms, James B. Detachable bottle handle. 3,679,253, Cl. 294-31.200.
Simon, Henry, Limited: *See*—
Moss, John Arthur, 3,679,117.
Simonelli, Chris P., to Ford Motor Company. Seat back latch. 3,679,259, Cl. 297-379.000.
Sinclair Research, Inc.: *See*—
Sanford, Robert A.; Mooi, John; and Rogers, Edward S., 3,679,605.
Singer Company, The: *See*—
Barchard, Francis M., 3,678,997.
England, George G., 3,679,868.
Hunt, John M.; and Dannatt, Hugh St. L., 3,679,038.
Killinger, Karl H.; and Ketterer, Stanley J., 3,678,871.
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Singer Company, The, mesne: *See*—
Carver, Fred F., 3,679,880.
Faith, Ruth L.; and Grobman, William, 3,679,876.
Kittredge, Raymond Edson, 3,679,147.
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Singh, Shobha: *See*—
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Singleton, John C.: *See*—
Sherrick, Ronald E.; and Singleton, John C., 3,679,173.
Singleton, Richard L., to Loopco. Combined crocheting and looping needle. 3,678,712, Cl. 66-118.000.
Sinitsky, Vladimir Mikhailovich: *See*—

Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.

Skiba, Alexander, Jr., to Royal Packaging Equipment, Inc. Machine for package turnover and orientation. 3,679,070, Cl. 214-1.00q.

Skrivan, Joseph Francis, to American Cyanamid Company. Production of phosphorus. 3,679,363, Cl. 23-223.000.

Slabakov, Christo G. Automobile seat back. 3,679,261, Cl. 297-231.000.

Slavik, Valter, to Heberlein & Co., AG. Yarn control apparatus. 3,678,579, Cl. 30-131.000.

Slavitt, Eugene. Leg rest for vehicle driver's seat. 3,679,262, Cl. 297-427.000.

Sloan, Donald A., to Bahnson Company, The. Suction manifold for the lickerin section of a carding machine. 3,678,538, Cl. 19-107.000.

Sloane, R. & G., Manufacturing Company, Inc.: *See—*
Wise, Eugene H.; and Blumenkranz, James J., 3,678,634.

Slobodnik, Andrew J., Jr., to United States of America, Air Force. Acoustic surface wave delay line. 3,680,009, Cl. 333-30.000.

Smalling, Claude W., Jr., to IRD Mechanalysis, Inc. Process for the vaporization of alkyl aromatic liquid feeds with removal of high boilers. 3,679,761, Cl. 260-672.0nc.

Smith, Arthur G.; and Turner, Allen H., to Ford Motor Company. Electrocoating apparatus with ionizing radiation means. 3,679,572, Cl. 204-300.000.

Smith, Douglas F., to General Electric Company. Acceleration control system for vehicles. 3,679,894, Cl. 246-182.00c.

Smith, Elwin G., & Company, Inc.: *See—*
Scott, Harley D., 3,678,642.

Smith, George A., to Dravo Corporation. Apparatus for use in lining vessels. 3,679,071, Cl. 214-1.00h.

Smith, George J., to Lobdell-Emery Manufacturing Co. Steering column mounting bracket assembly. 3,679,163, Cl. 248-223.000.

Smith International Incorporated: *See—*
Fischer, John F., 3,678,883.

Smith, James A. Chance readout educational ball. 3,679,212, Cl. 273-144.00b.

Smith Kline & French Laboratories: *See—*
Ross, Stephen T.; and Zirkle, Charles L., 3,679,693.

Smith, Mansel W. Air diffusion apparatus for the treatment of polluted water. 3,679,187, Cl. 261-123.000.

Smith, Marion D.: *See—*
O'Malley, John J.; and Smith, Marion D., 3,678,783.

Smith, Millard F. Oil collection boom. 3,679,058, Cl. 210-242.000.

Smith, Nelson S., Jr.; and Fasching, George E., to United States of America, Interior. Electrogasdynamic dust monitor. 3,679,973, Cl. 324-71.00r.

Smith, Nolan A.: *See—*
La Hue, Richard W.; and Smith, Nolan A., 3,679,762.

Smith, Noyes D., Jr., to Shell Oil Company. Filtered coherent wave holography. 3,680,041, Cl. 340-15.500.

Smith, Roger S.: *See—*
Cole, Addison D.; and Smith, Roger S., 3,678,937.

Smith, Russell G., to Xomox Corporation. Duplex strainer construction. 3,679,060, Cl. 210-333.000.

Smith, Sam E. Template-mash. 3,678,887, Cl. 118-504.000.

Smith, Terrill D., to Monsanto Company. Functional fluid compositions containing perfluoro surfactants. 3,679,587, Cl. 252-75.000.

Smith, Wayne E.: *See—*
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Smith,Frank: *See—*
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Smiths Industries Limited: *See—*
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Smoker, Benjamin K.: *See—*
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Smoker, Benjamin K.; Weaver, Richard L.; and Weaver, Marlin P. Feed delivering apparatus. 3,679,042, Cl. 198-57.000.

Smolin, Edwin M.: *See—*
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Smuda, Gerhard: *See—*
Aust, Manfred; and Smuda, Gerhard, 3,679,520.

Smyers, Frank C.; and Garrison, John H., to United States Smelting, Refining & Mining Company. Process for recovering lead, lead alloys, and lead compositions from batteries. 3,679,395, Cl. 75-77.000.

Snam Progetti S.p.A.: *See—*
Arrigoni, Virgilio; Sezzi, Franco; and Gaetani, Bruno, 3,678,732.

Snider, Orvill E.: *See—*
Balint, Laszlo J.; Roth, David W. H., Jr.; and Snider, Orvill E., 3,679,368.

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Bedo, Alfred; and Beck, Edward, 3,679,169.

Snyder, Gary L. Convertible water sprinkling device. 3,679,136, Cl. 239-188.000.

Snyder, Robert L., to American Standard Inc. Bimetallic elements. 3,678,757, Cl. 73-363.500.

Sobczak, Sigmar E. Smoking pipe holder. 3,678,940, Cl. 131-260.000.

Sobottka, Richard: *See—*
Klenk, Ludwig; Strutzel, Hans; and Sobottka, Richard, 3,679,435.

Societe Alsacienne de Constructions Macaniques de: *See—*
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Societe Anonyme Automobiles Citroen: *See—*
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Societe Anonyme dite: Plastra: *See—*
Friederich, Claude; and Cramazou, Etienne, 3,679,280.

Societe Anonyme Poclain: *See—*
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Societe des Accumulateurs Fixes et de Traction: *See—*
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Societe d'Exploitation des Brevets Granofibre: *See—*
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Societe d'Exploitations et de Realisations Industrielles et Commerciales Serico: *See—*
Giroud, Henri Philibert, 3,679,104.

Societe Flaminaire Marcel Quercia: *See—*
Lambert, Jacques, 3,679,346.

Societe Lorraine de Preparation Textile: *See—*
Largeron, Louis; and Raquin, Roger, 3,678,548.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Dorier, Bernard Louis Marcel; and Laedlein, Denis Jacques, 3,680,113.

Societe Nationale Industrielle Aerospatiale: *See—*
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Societe Rhodiaceta: *See—*
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Sodeteg, Inc.: *See—*
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Sogi, Toshiyuki: *See—*
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Sohm, Jean-Claude: *See—*
Dalard, Francis Jean; Augustinsky, Jan Witold; and Sohm, Jean-Claude, 3,679,488.

Soichet, Samuel. Intra uterine device and injector thereof. 3,678,927, Cl. 128-130.000.

Solt, George Stefan: *See—*
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Sommer, Hans: *See—*
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Sondhi, Man M., to Bell Telephone Laboratories, Incorporated. Reconstruction of object shape from sound diffraction pattern. 3,679,020, Cl. 181-.50r.

Sony Corporation: *See—*
Doi, Toshitada; and Akiba, Kosuke, 3,680,134.
Nakada, Yasuo; and Takita, Hideo, 3,679,933.

Sorell, Henry P.; Pomazak, Eugene; and Rygg, Sven, to Borden Inc. Pressure sensitive adhesive tape. 3,679,458, Cl. 117-68.500.

Sorensen, Leif Erik, to Anstalt fur Elektrohydraulische Anlagen. Hydraulic systems. 3,678,684, Cl. 60-19.000.

Sorensen, Neal E.: *See—*
Bailey, Robert C.; Estes, Harry A.; James, Glen S.; Klug, James R.; Montillon, Henry A.; Myring, Verne E.; Robertson, Orville H.; Sargeant, Blaine W.; and Sorensen, Neal E., 3,679,200.

Sorensen, Robert: *See—*
Scarnato, Thomas J.; Dryan, James J.; Lawler, Craig M.; and Sorensen, Robert, 3,678,671.

Sorokin, Peter P., to International Business Machines Corporation. Optically pumped liquid lasers. 3,679,995, Cl. 331-94.500.

Soubis, Jean-Pierre, to Chrysler France. Switching-off device for internal combustion engine fed by a dual-body carburettor. 3,678,911, Cl. 123-127.000.

Spalti, Max: *See—*
Zuhlke, Gerhard; Brandli, Paul; and Spalti, Max, 3,678,550.

Spectrol Electronics Corporation: *See—*
Gerwitz, Paul F., 3,679,848.

Speedrack Inc.: *See—*
Konstant, Anthony N., 3,679,067.

Spencer, Phillip B.: *See—*
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Sperry Rand Corporation: *See—*
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Pedersen, Poul K.; Wagstaff, Robert A.; and Waldrop, Thomas W., 3,678,772.
Shriver, Joe E., 3,679,015.

Spiegel, Si, to American Technical Industries, INC. Indoor-outdoor artificial Christmas tree. 3,679,528, Cl. 161-24.000.

Spiger, Robert J.: *See—*
Weiner, Leon; Kilpatrick, John E.; and Spiger, Robert J., 3,679,877.
Spisak, Steve, to TRW Inc., mesne. Stud welding tool and stud loading device therefor. 3,679,860, Cl. 219-98.000.
Spitzer, Ludwig sen. KG: *See—*
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Sponseller, Harold P.: *See—*
Graybill, Harold W.; Heider, James E.; and Sponseller, Harold P., 3,679,341.
Spotts, John A., Jr.: *See—*
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Springer, Kurt, to Swiss Aluminum Ltd. Welded joint. 3,679,569, Cl. 204-286.000.
Springs, Thomas W., to Besser Company. Apparatus for forming building blocks. 3,679,340, Cl. 25-41.00j.
Springwater Manufacturing Co., Inc.: *See—*
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Square D Company: *See—*
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Squibb, E. R., & Sons, Inc.: *See—*
Levine, Seymour D., 3,679,747.
Staas, Frans Adrianus, to U.S. Philips Corporation. Device for transporting thermal energy at temperatures lying below the lamda-temperature of helium. 3,678,704, Cl. 62-514.000.
Stahlberg, Hans J., to Ford Motor Company. Four speed ratio power transmission mechanism for automotive vehicles. 3,678,785, Cl. 74-759.000.
Stahlheber, Benjamin L.: *See—*
Shemitz, Sylvan R.; and Stahlheber, Benjamin L., 3,679,893.
Staker, William C., to General Motors Corporation. Potentiometer-resistor network for producing a non-linear direct current potential output signal. 3,679,967, Cl. 323-79.000.
Stamicarbon N.V.: *See—*
Geus, John W., 3,679,398.
Standard Alliance Industries, Inc.: *See—*
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Standard Kollsman Instrument Corporation: *See—*
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Standard Oil Company: *See—*
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Schaap, Luke A.; and Den Herder, Marvin J., 3,679,588.
Standard Pressed Steel Co.: *See—*
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Stanford Research Institute: *See—*
Adams, David K.; and Ho, Raymond Y.-C., 3,680,011.
Stanke, Rudi G., to Johnson Hydraulic Equipment Co. Portable lawn raking devices. 3,678,665, Cl. 56-13.400.
Stanley Denki Kabushiki Kaisha: *See—*
Tashiro, Kenichi; and Tanaka, Hirokazu, 3,680,024.
Stanley Drug Products, Inc.: *See—*
Cook, Elton S.; and Nutini, Leo G., 3,679,793.
Stapfer, Christian H.; and Racz, William B., to Cincinnati Milacron Chemicals, Inc. Rigid halogen-containing resin compositions. 3,679,619, Cl. 260-23.0xa.
Stargardter, Hans, to United Aircraft Corporation. Filament reinforced gas turbine blade. 3,679,324, Cl. 416-229.000.
Startzman, Paul E., to Philadelphia Manufacturing Company, Inc. Ticket dispenser. 3,679,113, Cl. 226-76.000.
Statistical Services, Inc.: *See—*
Anthony, Myron L., 3,680,118.
Staudenmayer, William J.: *See—*
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Stauffer, Alfred, to Maschinenfabrik Meyer & Burger A.G. Reciprocating saw. 3,678,918, Cl. 125-16.000.
Stayner, Robert A., to Chevron Research Company. Stable dielectric fluid for electrical discharge machining comprising a mineral oil, a metal sulfonate and a phenolic antioxidant. 3,679,857, Cl. 219-69.00d.
Steel Company of Canada Limited, The: *See—*
Addinall, Ramon L.; Lewis, William T.; and Mudroch, Otokar, 3,679,513.
Steel, Margaret Lillian: *See—*
Burgess, Anthony Joseph; Eagles, Alan Charles; and Steel, Margaret Lillian, 3,679,506.
Stefancin, James M., to Dow Chemical Company, The. Bag dispensing arrangement. 3,679,127, Cl. 229-62.500.
Stehning, Paul Rolf. Reaction vessel for chemical and physical reactions of viscous masses. 3,678,984, Cl. 159-25.00a.
Steidinger, Donald J.; and Koepke, Donald H., to Uarco Incorporated. Imprinting attachment for autographic registers. 3,678,851, Cl. 101-260.000.
Steinbruegge, Kenneth B.: *See—*
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Stemco Manufacturing Company, Inc.: *See—*
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Stenger, Vernon A., to Dow Chemical Company, The. Mercury recovery from sediment. 3,679,396, Cl. 75-81.000.
Stenlund, Stig Gote, to Monsun-Tison AB. Self-aligning mounting device, particularly for hydraulic or pneumatic cylinders. 3,679,276, Cl. 308-26.000.
Stephansen, Erik W.: *See—*
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Stephens, Curtis L., to Eastman Kodak Company. Method of forming heterogeneous photoconductive compositions and elements. 3,679,407, Cl. 96-1.600.
Stephens, Leonard W., to Palmer Filter Equipment Company. Reversible one-way clutch. 3,679,031, Cl. 192-44.000.
Stephens, Robert K., to Polaroid Corporation. Novel frictional resistance motion picture film. 3,679,411, Cl. 96-29.000.
Sterling Drug Inc.: *See—*
Archer, Sydney; and Lorenz, Roman R., 3,679,752.
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Sternco Industries, Inc.: *See—*
Lovitz, David D., 3,678,899.
Steudel, Fritz, to Raytheon Company. Phased array. 3,680,109, Cl. 343-100.0sa.
Stevens, J. P., & Co., Inc.: *See—*
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Stewart-Warner Corporation: *See—*
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Stine, Orrin Burr, to Borden Inc. Cutter-type box for dispensing packaging film with protective mounting for the cutter. 3,679,110, Cl. 225-47.000.
Stock, David K., to FMC Corporation. Uniform pressure draw rolls. 3,679,115, Cl. 226-177.000.
Stoffel, Robert W., to Allied Chemical Corporation. Controlled inertia shoulder strap retracting device. 3,679,152, Cl. 242-107.400.
Stoll, Albert; and Wanka, Walter, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Corpuscular radiation welding process. 3,679,862, Cl. 219-121.0em.
Stone, Albert M.; and Westerfield, Edwin E., to United States of America, Navy System. for determining azimuth. 3,680,124, Cl. 343-113.00r.
Stone, Guthrie B.; and Holmes, William F., to Springwater Manufacturing Co., Inc. Hydraulically operated metal forming machine. 3,678,724, Cl. 72-324.000.
Storage Technology Corporation: *See—*
Herger, Zoltan L.; and Olmsted, Dennis R., 3,679,841.
Strader, George C.: *See—*
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Strader, Judith D.: *See—*
Goldfarb, Adolph E.; Strader, Judith D.; and Strader, George C., 3,678,616.
Straub, Dieter, to Telefunken Patentverwertungsgesellschaft. Full adder. 3,679,883, Cl. 235-175.000.
Strauss, Edgar H., to Ruti Machinery Works, Ltd. Reed tooth arrangement on a wave-type loom. 3,678,966, Cl. 139-12.000.
Strauss, Irving: *See—*
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Strauss, Robert E.; and Hashimoto, Saburo, to Union Oil Company of California. Plant growth stimulated by a combination of glycolic acid and gibberellin. 3,679,392, Cl. 71-89.000.
Strebe, Arthur C.: *See—*
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Streck, Clemens, to GAF Corporation. Direct dye, alkanolamine or morpholine, and neutral salt concentrate and milling preparation thereof. 3,679,353, Cl. 8-79.000.
Strick, Karl H., to Fram Corporation. Prestressed flexible bladed fan. 3,679,321, Cl. 416-132.000.
Strittmatter, Martha L. Support pillow. 3,678,926, Cl. 128-94.000.
Stroiwas, Edward: *See—*
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Stroszynski, Joachim, to Kalle Aktiengesellschaft. Process for treating a metal surface and reprographic material comprising a surface so treated. 3,679,418, Cl. 96-86.000.
Strutzel, Hans: *See—*
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Studebaker Corporation: *See—*
Nise, Wilfred C.; and Lowder, Dale E., 3,678,524.
Stuhlmann, Hans; and Stuhlmann, Werner, to Battenfeld Maschinenfabriken GmbH., Firma, mesne. Apparatus for treatment of granulated goods. 3,678,597, Cl. 34-48.000.
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Sturhan, Klaus, to Gebr. Isringhausen, Firma. Seat construction. 3,679,166, Cl. 248-399.000.
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Sullivan, Matthew A., to Sullivan Products, Inc. Fuel tank for use in model airplanes. 3,679,092, Cl. 220-85.00r.
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Sun Oil Company: *See—*
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Sunbeam Plastics Corporation: *See—*
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Sundstrand Data Control, Inc.: *See—*
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Susquehanna Corporation, The: *See—*
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Sussman, Philip S.: *See—*
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Suzuki, Toshi; and Nishijima, Tsutomu, to Victor Company of Japan, Limited. Two track multiple element magnetic head. 3,679,839, Cl. 179-100.20c.
Svorec, Richard S. Keyed stereophonic transmission system. 3,679,836, Cl. 179-15.0bt.
Swanson, Eric R.: *See—*
Bickel, John E.; Freres, Clemens H.; Gossard, Earl E.; Britt, James E.; Ortwein, Norman R.; and Swanson, Eric R., 3,680,115.
Swearingen, Kent W.: *See—*
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Swett, James B.; and Croyle, Jack V., to Dart Industries, Inc. Press type closure. 3,679,088, Cl. 220-42.00r.
Swett, James B.; and Croyle, Jack V., to Dart Industries Inc. Press type closure. 3,679,089, Cl. 220-42.00c.
Swindler, Henry A., to Parker-Hannifin Corporation. Fluid transfer device. 3,678,972, Cl. 141-387.000.
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Harris, Paul E.; and Mader, George E., 3,680,098.
Systematic Multi-Level Parking Company: *See—*
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Szekely, Otto E., to Power Flo Products Incorporated. Variably controlled planetary drive structure and method. 3,678,786, Cl. 74-782.000.
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Te Velde, Ties Siebolt; and Van Heusden, Sybrandus, to U.S. Philips Corporation. Semiconductor devices comprising a heterojunction. 3,679,496, Cl. 148-188.000.
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Thibodeau, Gregg Joseph, to RCA Corporation. Clamp circuit for preventing saturation of operational amplifier. 3,679,989, Cl. 330-185.000.
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Tisdel, Lawrence C.; and Scott, Harry B., to Brameda Resources Limited. Crystallization and recovery of elemental sulfur from solvents. 3,679,371, Cl. 23-295.000.
Titow, Witold, to Molins Limited. Decorative composition and process for preparing same. 3,679,612, Cl. 260-2.000.
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Wada, Yoshiyo; Kinjo, Hisao; and Okano, Keigo, to Victor Company of Japan, Ltd. Signal compensation system in recording and reproducing apparatus. 3,679,822, Cl. 178-6.6do.

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Wantland, Charles F.; Juge, Frank E., Jr.; and Hinds, William H., to Shell Oil Company. Molten salt hydrofining process. 3,679,577, Cl. 208-108.000.
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Watabe, Shigeru; and Ohmi, Atsushi, to Aisin Seiki Kabushiki Kaisha. Sealing means between master cylinder and brake booster. 3,678,687, Cl. 60-54.60p.
Watanabe, Asao, to Nippon Kogaku K. K. Electronic shutter device comprising logarithmic-antilogarithmic circuitry. 3,679,905, Cl. 250-206.000.
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Wech, Robert J. Bag machine. 3,678,813, Cl. 93-20.000.
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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Arcesi, Joseph A.: *See*—
Petropoulos, Constantine C., and Arcesi. T900,031.

Baker, Melvin C., and A. O. Rogers. Polytetramethylene ether glycol. T900,025, 7–25–72, Cl. 260—615.

Barr, Charles R. Color diffusion transfer process. T900,029, 7–25–72, Cl. 96—3.

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Britt, John Q, W. O. Griffiths, and M. A. Howe, Jr., to W. R. Grace & Co. Sleeve-wrapped package and method of preparing same. T900,020, 7–25–72, Cl. 206—65.

Caldwell, John R., and W. J. Jackson, Jr. Method for preparing fire retardant polyester fibers. T900,021, 7–25–72, Cl. 117—136.

Continental Oil Co.: *See*—
Gordy, Travis L. T900,017.

Dickert, James E., and W. D. McGillen. Hot melt carpet backing adhesives and article of manufacture and process. T900,016, 7–25–72, Cl. 260—27.

Dietl, Hans K., and A. E. Lewis, Separation of H-isopropylacrylamide from sulfuric acid solutions thereof. T900,014, 7–25–72, Cl. 260—561.

Du Pont de Nemours, E. I., and Co.: *See*—
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Firestone Tire & Rubber Co., The: *See*—
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Gordy, Travis L., to Continental Oil Co. Strippable coating composition. T900,017, 7–25–72, Cl. 117—6.

Grace, W. R., & Co.: *See*—
Britt, John Q., Griffiths, and Howe. T900,020.

Griffiths, William O.: *See*—
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Hollander, Edward R., Jr. Extrusion apparatus for manufacture of thermoplastic pipe. T900,024, 7–25–72, Cl. 18—14.

Holstead, Colin: *See*—
Thomas, David A., and Holstead. T900,030.

Howe, Milton A., Jr.: *See*—
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Jackson, Winston J., Jr.: *See*—
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Johnson, Charles R., and W. E. Jones, to The Firestone Tire & Rubber Co. Polymerization process. T900,022, 7–25–72, Cl. 260—80.7.

Jones, Thomas M. Suspensions. T900,026, 7–25–72, Cl. 71—34.

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Mitchell, Robert D.: *See*—
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Murphy, John J., Jr., W. C. Smith, and W. D. Marsh. Polyethylene. T900,019, 7–25–72, Cl. 260—878.

Petropoulos, Constantine C., and J. A. Arcesi. Novel pyrylium salts and uses therefor. T900,031, 7–25–72, Cl. 96—1.5.

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LIST OF PLANT PATENTEES

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1.5 3,679,405
1.6 3,679,406
3,679,407
3,679,408
3 3,679,409
27 3,679,410
29 3,679,411
33 3,679,412
49 3,679,413
67 3,679,414
68 3,679,415
78 3,679,417
86 3,679,418
91R 3,679,419
3,679,420
3,679,421
107 3,679,422
109 3,679,423
3,679,424
114 3,679,425
114.1 3,679,426
120 3,679,427
124 3,679,428

CLASS 99

2R 3,679,429
52 3,679,431
71 3,679,416
86 3,679,432
90CB 3,679,430
90HP 3,579,433
107 3,679,434
176 3,679,435
3,679,436
3,679,437
232 3,679,438
340 3,678,844

CLASS 100

4 3,678,845
155R 3,678,846

CLASS 101

93C 3,678,847
125 3,678,848
157 3,678,849
170 3,678,850
260 3,678,851
465 3,678,852

CLASS 102

27R 3,678,853
37.2 3,678,855
37.4 3,678,856
37.8 3,678,854
39 3,678,857
43P 3,678,858
76R 3,678,859

CLASS 104

23FS 3,678,860
172S 3,678,862

172 3,678,861

CLASS 105

4R 3,678,863
3,678,864
369A 3,678,866
369B 3,678,865
377 3,678,867

CLASS 106

1 3,679,439
39R 3,679,440
41 3,679,441
43 3,679,442
50 3,679,443
55 3,679,444
88 3,679,445
120 3,679,446
287 3,679,447

CLASS 108

51 3,678,868

CLASS 110

8R 3,678,869
3,678,870

CLASS 112

162 3,678,871

CLASS 114

16.7 3,678,872
42 3,678,873
66.5P 3,678,874
73 3,678,875
102 3,678,876
125 3,678,877
144R 3,678,878

CLASS 115

35 3,678,879

CLASS 116

67 3,678,880
70 3,678,881
114AD 3,678,882
114Q 3,678,883
121 3,678,884
124 3,678,885
173 3,678,886

CLASS 117

1 3,679,448
3,679,449
3 3,679,450
33.3 3,679,451
33.5 3,679,452
37LE 3,679,453
44 3,679,454
47 3,679,455
63 3,679,456
66 3,679,457
68.5 3,679,458
69 3,679,459
93.1PF 3,679,460
93.31 3,679,461
105.5 3,679,462
107.2R 3,679,463
125 3,679,464
126GE 3,679,465
127 3,679,466
129 3,679,467
138.8F 3,679,468
161UZ 3,679,469
200 3,679,470
201 3,679,471
212 3,679,472
3,679,473
216 3,679,475
236 3,679,476

CLASS 118

48 3,678,888
49 3,678,889
63 3,678,890
402 3,678,891
500 3,678,893
504 3,678,887
3,678,892
624 3,678,894
637 3,678,895
3,678,896
3,678,897

CLASS 119

2 3,678,899
3 3,678,898
4 3,678,900
26 3,678,901
51.11 3,678,902
120 3,678,903

CLASS 123

32EA 3,678,904
52M 3,678,905
90.47 3,678,906
117A 3,678,907
119A 3,678,909
119B 3,678,910
119D 3,678,908
127 3,678,911
136 3,678,912
149D 3,678,913
195C 3,678,914

CLASS 125

11CD 3,678,916
11 3,678,915
12 3,678,917
16R 3,678,918

CLASS 126

92R 3,678,919
344 3,678,920

CLASS 128

1R 3,678,921
2.05F 3,678,922
33 3,678,923
46 3,678,924
92BB 3,678,925
94 3,678,926
130 3,678,927
138 3,678,928
146.6 3,678,929
218M 3,678,930
220 3,678,931
227 3,678,932
296 3,678,933
317 3,678,934
325 3,678,935
402 3,678,936
419P 3,678,937

CLASS 130

27E 3,678,938

CLASS 131

144 3,678,939
260 3,678,940
261B 3,678,941

CLASS 132

5 3,678,942
9 3,678,943
45R 3,678,944
46R 3,678,945
48R 3,678,946
88.7 3,678,947

CLASS 134

8 3,679,477
25R 3,679,478
40 3,679,479
46 3,679,483
167C 3,678,948

CLASS 135

20 3,678,949

CLASS 136

6 3,679,480
24 3,679,481
25 3,679,482
83R 3,679,484
86E 3,679,486
86R 3,679,485
90 3,679,487
100M 3,679,488
175 3,679,489
221 3,679,490
236 3,679,491

CLASS 137

1 3,678,950
14 3,678,951
53 3,678,952
81.5 3,678,953
106 3,678,954
238 3,678,955
242 3,678,956
268 3,678,957
512.1 3,678,958
625.11 3,678,959
625.47 3,678,960
636.2 3,678,961

CLASS 138

39 3,678,962
41 3,678,963
103 3,678,964

CLASS 139

1C 3,678,965
12 3,678,966
35 3,678,967
127R 3,678,968
370 3,678,969

CLASS 140

103 3,678,970
107 3,678,971

CLASS 141

387 3,678,972

CLASS 143

32R 3,678,973

CLASS 144

2R 3,678,974
28.5 3,678,975

CLASS 146

43R 3,678,976

CLASS 148

1.5 3,679,492
6.16 3,679,493
20.3 3,679,494
179 3,679,495
188 3,679,496

CLASS 150

30 3,678,977

CLASS 151

21 3,678,978
37 3,678,979
41.7 3,678,980
41.76 3,678,981

CLASS 152

361 3,678,982

CLASS 156

2 3,679,497
3 3,679,498
7 3,679,499
11 3,679,500
17 3,679,501
3,679,502
54 3,679,503
62 3,679,504
71 3,679,505
72 3,679,506
148 3,679,507
173 3,679,508
182 3,679,509
245 3,679,510
251 3,679,511
272 3,679,512
309 3,679,513
3,679,514
3,679,515
315 3,679,516
345 3,679,517
351 3,679,518
359 3,679,519
406 3,679,520
429 3,679,521
447 3,679,523
477 3,679,522
502 3,679,524
515 3,679,525
580 3,679,526

CLASS 159

6W 3,678,983
25A 3,678,984

CLASS 160

188 3,678,985

CLASS 161

5 3,679,527
24 3,679,528
44 3,679,529
48 3,679,530
3,679,531
59 3,679,532
66 3,679,533
68 3,679,534
109 3,679,535
3,679,536
135 3,679,537
159 3,679,538
3,679,539
3,679,540
175 3,679,541

CLASS 162

1 3,679,542
49 3,679,543
157R 3,679,544

CLASS 164

45 3,678,987
49 3,678,988
51 3,678,986
246 3,678,989
274 3,678,990

CLASS 165

9 3,678,991
10 3,678,992
76 3,678,993
111 3,678,994
185 3,678,995

CLASS 166

.5 3,678,996
53 3,678,997
123 3,678,998
236 3,678,999
273 3,679,000
292 3,679,001

CLASS 171

56 3,679,002

CLASS 172

15 3,679,003
26.5 3,679,004

CLASS 173

128 3,679,005
152 3,679,006

CLASS 174

16R 3,679,810
72B 3,679,811
108 3,679,812

CLASS 175

16 3,679,007
220 3,679,008
374 3,679,009

CLASS 176

68 3,679,545
78 3,679,546
3,679,547

CLASS 177

16 3,679,010
134 3,679,011
147 3,679,012
184 3,679,013
216 3,679,014

CLASS 178

5.1 3,679,813
5.4CD 3,679,814
3,679,817
3,679,818
5.4HE 3,679,816
5.4M 3,679,815
5.8R 3,679,819
6 3,679,820
3,679,821
6.6DC 3,679,822
6.6DD 3,679,823
6.7R 3,679,824
6.8 3,679,825
7.1 3,679,826
7.2 3,679,827
7.6 3,679,828
7.9 3,679,829

CLASS 179

1GP 3,679,833
1SA 3,679,830
2C 3,679,831
15BT 3,679,832
3,679,836
18C 3,679,834
27FD 3,679,835
37 3,679,837
100.2CA 3,679,838
3,679,841
100.2C 3,679,839
100.2E 3,679,842
100.2T 3,679,840
100.41K 3,679,843
115.5R 3,679,844
146R 3,679,845

CLASS 180

6.2 3,679,015
44 3,679,016
73TL 3,679,017
77S 3,679,018
98 3,679,019

CLASS 181

.5H 3,679,021
.5R 3,679,020
31A 3,679,023
31B 3,679,022
49 3,679,024

CLASS 182

20 3,679,025
132 3,679,026

CLASS 188

74 3,679,027
202 3,679,028
321 3,679,029
345 3,679,030

CLASS 192

44 3,679,031
46 3,679,032
48.7 3,679,033
111A 3,679,034
129A 3,679,035

CLASS 195

6 3,679,548

CLASS 197

18 3,679,036
19 3,679,037
98 3,679,038
175 3,679,039

CLASS 198

1 3,679,040
24 3,679,041
57 3,679,042
105 3,679,043
193 3,679,044
203 3,679,045
213 3,679,046

CLASS 200

6A 3,679,846
3,679,847
8A 3,679,848
33R 3,679,849
37R 3,679,850
148A 3,679,851
153SC 3,679,852
166BH 3,679,854
166J 3,679,853

CLASS 203

12 3,679,549
38 3,679,550

CLASS 204

1T 3,679,551
37R 3,679,552
43 3,679,553
56 3,679,554
67 3,679,555
97 3,679,557
140.5 3,679,559
143R 3,679,558
157.1S 3,679,560
159.15 3,679,561
159.23 3,679,562
180R 3,679,565
181 3,679,564
228 3,679,566
3,679,567
242 3,679,568
269 3,679,556
286 3,679,569
297R 3,679,570
298 3,679,571
300 3,679,572

CLASS 206

39 3,679,047
46R 3,679,048

CLASS 208

10 3,679,573
57 3,679,574
65 3,679,575
74 3,679,576
108 3,679,577
138 3,679,578
166 3,679,563
323 3,679,579
672R 3,679,768

CLASS 209

71 3,679,049
84 3,679,050

CLASS 210

26 3,679,580
33 3,679,581
73 3,679,051
75 3,679,052
86 3,679,053
95 3,679,054
110 3,679,055
221 3,679,056
223 3,679,057
242 3,679,058
321 3,679,059
333 3,679,060
486 3,679,061
3,679,062
526 3,679,063

CLASS 211

43 3,679,064
163 3,679,066
182 3,679,067

CLASS 213

8 3,679,068
43 3,679,069

CLASS 214

1H 3,679,071
1Q 3,679,070
3,679,073
6BA 3,679,072
83.26 3,679,074
84 3,679,075
152 3,679,076
302 3,679,077
3,679,078
3,679,079
450 3,679,080
516 3,679,081
518 3,679,082
730 3,679,083

CLASS 215

9 3,679,084
3,679,085

CLASS 219

10.55 3,679,855
59 3,679,856
69D 3,679,857
76 3,679,858
90 3,679,859
98 3,679,860
117 3,679,861
121EM 3,679,862
121LM 3,679,863
130 3,679,864
131R 3,679,865
137 3,679,866
272 3,679,867
368 3,679,868
432 3,679,869
445 3,679,870
499 3,679,871
501 3,679,872
3,679,873

CLASS 220

10 3,679,086
18 3,679,087
42C 3,679,089
42R 3,679,088
67 3,679,090
3,679,091
85R 3,679,092
90.2 3,679,093

CLASS 221

50 3,679,094
3,679,095
56 3,679,096
163 3,679,097

CLASS 222

23 3,679,098
55 3,679,099
136 3,679,101
192 3,679,102
3,679,103
396 3,679,104
567 3,679,105

CLASS 223

73 3,679,106
88 3,679,100

CLASS 224

5P 3,679,107
8R 3,679,108

CLASS 225

2 3,679,109
47 3,679,110
97 3,679,111

CLASS 226

3 3,679,112
76 3,679,113
97 3,679,114
177 3,679,115
197 3,679,116
199 3,679,117

CLASS 227

10 3,679,118

CLASS 229

1.5 3,679,119
23BT 3,679,120
40 3,679,121
3,679,122
43 3,679,123
51TS 3,679,124
55 3,679,125
62 3,679,126
62.5 3,679,127

CLASS 233

20R 3,679,128
26 3,679,129
3,679,130

CLASS 235

61.7R 3,679,874
3,679,875
3,679,876
92PC 3,679,877
146 3,679,878
150.31 3,679,879
151.34 3,679,880
152 3,679,881
156 3,679,882
175 3,679,883
193.5 3,679,884

CLASS 236

59 3,679,131

CLASS 239

4 3,679,132
34 3,679,133
70 3,679,134
183 3,679,135
188 3,679,136
267 3,679,138
327 3,679,137

CLASS 240

2VC 3,679,885
3 3,679,886
8.16 3,679,887
10.1 3,679,888
25 3,679,889
41.6 3,679,890
52 3,679,891
103R 3,679,893
103 3,679,892

CLASS 241

2 3,679,139
95 3,679,140
106 3,679,141
181 3,679,142
280 3,679,143
300 3,679,144

CLASS 242

54R 3,679,145
55.18 3,679,147
55.53 3,679,146
71.6 3,679,148
75.5 3,679,149
78.1 3,679,150
85 3,679,151
107.4 3,679,152
153 3,679,153

CLASS 244

17.11 3,679,154
32 3,679,155

77R 3,679,156
141 3,679,157

CLASS 246

182C 3,679,894
253 3,679,895

CLASS 248

9 3,679,160
10 3,679,158
22 3,679,159
154 3,679,161
156 3,679,162
223 3,679,163
243 3,679,164
256 3,679,165
399 3,679,166

CLASS 249

173 3,679,167
196 3,679,168

CLASS 250

41.9MB 3,679,896
42 3,679,897
43.5R 3,679,898
3,679,899
49.5B 3,679,900
59 3,679,901
65R 3,679,902
83.3UV 3,679,903
199 3,679,904
206 3,679,905
239 3,679,906

CLASS 251

88 3,679,169
104 3,679,170
148 3,679,171
229 3,679,172

CLASS 252

8.3 3,679,582
8.57 3,679,583
33.4 3,679,584
51.5A 3,679,585
62.1 3,679,586
75 3,679,587
3,679,588
102 3,679,589
104 3,679,590
142 3,679,591
153 3,679,592
170 3,679,593
188.3 3,679,594
301.1R 3,679,596
301.1W 3,679,595
301.2R 3,679,598
301.4F 3,679,597
305 3,679,599
361 3,679,600
432 3,679,603
437 3,679,601
442 3,679,602
455Z 3,679,604
463 3,679,605
514 3,679,606
518 3,679,607
526 3,679,608
527 3,679,609
529 3,679,610
542 3,679,611

CLASS 254

29A 3,679,173
45 3,679,174
51 3,679,175
54 3,679,176
89R 3,679,177
93R 3,679,178
3,679,179
172 3,679,180

CLASS 259

5 3,679,181
9 3,679,182
3,679,183
72 3,679,184

CLASS 260

2EP 3,679,612
2.5M 3,679,614
2.5N 3,679,613
3.3 3,679,615
18R 3,679,616
19R 3,679,617
21 3,679,618
23XA 3,679,619
29.6TA 3,679,620
29.6H 3,679,621
29.7N 3,679,622
31.2R 3,679,623
33.4R 3,679,703
37PC 3,679,629
37SB 3,679,625
37N 3,679,624
41A 3,679,626
41.5R 3,679,627
45.7PS 3,679,628
47CB 3,679,631
47CP 3,679,632
47EN 3,679,630
68DE 3,679,764
75NE 3,679,633
77.5B 3,679,634
78R 3,679,635
3,679,636
78S 3,679,638
78U 3,679,639
78.5T 3,679,640
79.3MU 3,679,641
80.72 3,679,642
85.5R 3,679,643
86.1E 3,679,644
88.3R 3,679,637
3,679,645
91.3PV 3,679,646
3,679,647
3,679,648
91.3VA 3,679,649
93.5S 3,679,650
3,679,651
94.9B 3,679,652
112.5 3,679,653
3,679,654
3,679,655
157 3,679,656
205 3,679,657
209R 3,679,658
3,679,659
211R 3,679,660
233.3R 3,679,661
239D 3,679,662
239.1 3,679,663
239.3P 3,679,664
239.3R 3,679,665
3,679,673
240CA 3,679,668
240D 3,679,669
3,679,671
240G 3,679,670
240J 3,679,672
240R 3,679,667
240.8 3,679,674
242 3,679,675
243R 3,679,676
247.1 3,679,677
249.8 3,679,678
250R 3,679,679
3,679,680
256.4C 3,679,681
256.4F 3,679,682
257 3,679,683
272 3,679,684
276 3,679,685
287R 3,679,686
3,679,687
290H 3,679,689
290P 3,679,688
293.8 3,679,666
294.8F 3,679,691
295AM 3,679,690
296AE 3,679,693
296B 3,679,692
299 3,679,694
302S 3,679,695
306.7 3,679,696
309 3,679,697
3,679,698
310D 3,679,699
315 3,679,700
326.11 3,679,701
326.14R 3,679,702
340.3 3,679,704
340.7 3,679,705
3,679,707
343 3,679,706
343.6 3,679,708
346.1R 3,679,709
346.3 3,679,710
348R 3,679,711
3,679,712
388 3,679,713
397.1 3,679,715
397.3 3,679,714
397.45 3,679,717
3,679,718
397.5 3,679,716
400 3,679,719
408 3,679,720
429.5 3,679,721
429.7 3,679,722
448AD 3,679,723
448.8R 3,679,724
454 3,679,725
455A 3,679,726
463 3,679,727
465D 3,679,730
465.5 3,679,728
3,679,729
471A 3,679,732
475P 3,679,731
479C 3,679,733
3,679,734
3,679,735
3,679,736
485R 3,679,738
486R 3,679,737
488F 3,679,739
524R 3,679,740
525 3,679,741
534M 3,679,742
545R 3,679,743
559T 3,679,744
561N 3,679,745
563R 3,679,746
566AE 3,679,747
583H 3,679,748
586A 3,679,750
586B 3,679,751
3,679,753
586R 3,679,749
3,679,752
587 3,679,754
615BF 3,679,755
620 3,679,766
631.5 3,679,756
653.1T 3,679,757
653.8 3,679,767
659R 3,679,758
663 3,679,759
668C 3,679,760
672NC 3,679,761
672T 3,679,769
674A 3,679,770
676R 3,679,771
677H 3,679,762
3,679,763
680B 3,679,772
683R 3,679,765
683.3 3,679,773
824R 3,679,774
878B 3,679,775
879 3,679,776
897A 3,679,777
932 3,679,778
943 3,679,779
959 3,679,780

CLASS 261

36A 3,679,185
50R 3,679,186
123 3,679,187

CLASS 263

50 3,679,189

CLASS 264

3E 3,679,782
3R 3,679,781
53 3,679,783
73 3,679,784
98 3,679,785
176F 3,679,786
211 3,679,788
249 3,679,789
280 3,679,790
342RE 3,679,791

CLASS 266

3R 3,679,190
23K 3,679,191
27 3,679,192
3,679,193
32 3,679,194
35 3,679,195

CLASS 267

52 3,679,188
140 3,679,196
152 3,679,197

CLASS 269

3 3,679,198
254R 3,679,199

CLASS 270

4 3,679,200

CLASS 271

51 3,679,201
57 3,679,202

CLASS 272

60 3,679,203
81 3,679,204

CLASS 273

29A 3,679,205
32R 3,679,206
80A 3,679,207
95R 3,679,208
129 3,679,209
134C 3,679,210
144B 3,679,211
3,679,212
156 3,679,213
189R 3,679,214

CLASS 274

4D 3,679,215

CLASS 277

3 3,679,216
3,679,217
233 3,679,218

CLASS 279

1SJ 3,679,221
1B 3,679,220
1Q 3,679,219

CLASS 280

36R 3,679,222
37 3,679,223
43.23 3,679,224
47.18 3,679,225
47.19 3,679,226
47.24 3,679,227
150SB 3,679,228
3,679,229
405B 3,679,230
406A 3,679,231
3,679,232
476R 3,679,233
511 3,679,234

CLASS 285

14 3,679,235
39 3,679,236
109 3,679,237
144 3,679,238
176 3,679,239
233 3,679,240
340 3,679,241
417 3,679,242

CLASS 287

20R 3,679,244
21 3,679,243
52 3,679,245
52.05 3,679,246
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106R	3,680,117	756	3,680,138		CLASS 352	71	3,679,314	300	3,679,329	267	3,679,799
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	3,680,119	758	3,680,141		CLASS 353	114	3,679,309	477	3,679,331	271	3,679,801
109	3,680,120	770	3,680,142	14	3,679,297	168	3,679,316	503	3,679,332	285	3,679,802
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710	3,680,131	157	3,679,290			183	3,679,323			289	3,679,803
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